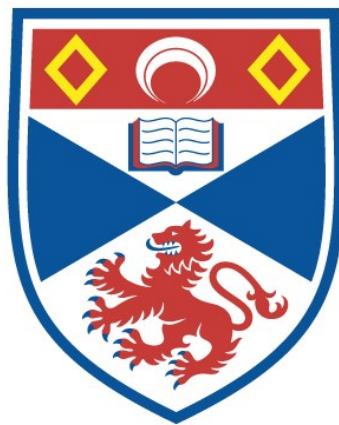


CERAMICS CARRIED BY SPANISH SHIPS FROM THE
16TH TO THE 18TH CENTURIES WITH SPECIFIC
REFERENCE TO COLLECTIONS RECOVERED FROM
SHIPWRECKS IN THE CARIBBEAN BASIN, BRITAIN
AND BERMUDA

Mitchell W. Marken

A Thesis Submitted for the Degree of PhD
at the
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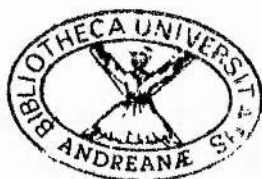
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**Ceramics carried by Spanish ships from the
16th to the 18th centuries with specific
reference to collections recovered from
shipwrecks in the Caribbean basin,
Britain and Bermuda.**

A Ph.D. dissertation presented to the University of St. Andrews
by Mitchell W. Marken
February, 1991



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ABSTRACT

This paper records and analyses the common ware pottery finds from Spanish shipwrecks dated from the 16th to the 18th centuries. A chronological presentation of *olive jar-type botijas (olive jars)*, *Columbia Plain*, and other coarse earthenware types from accurately dated shipwreck assemblages has provided the basis for reliable typologies, and helped to refine previous studies.

The shipwreck collections utilised consist of 17 accurately dated wrecks. First hand recording of pottery is included for 13 of the assemblages. The collections of the ceramics are housed in locations in Britain, the Caribbean, Florida, Texas, and the state of Louisiana. The collections are all from ships which were engaged in Spain's New World colonisation and trade, either en route to the Indies or returning. The exception is the material from the Spanish Armada which is included because of its official nature and the fact that outfitting occurred at Seville, the primary port for the Indies trade. In addition to the primary material, reference is made to pottery finds from contemporaneous shipwrecks which have previously been recorded, in addition to inclusions of historical research. Availability of the collections for further study is also discussed.

Ceramics have a tendency to change over relatively short periods of time and using pottery finds as primary dating evidence has proved effective. Some of the most common Spanish ceramic traditions found on New World colonial terrestrial sites, however, have proved difficult to analyse because they are usually undecorated and exhibit relatively little development over the period in question. The finds from shipwrecks include several intact vessels spanning the period and recording of the finds has proved to reveal several distinguishing characteristics which have formed the basis for constructing new typologies of the most common wares encountered.

DECLARATIONS

I, Mitchell W. Marken, hereby certify that this thesis, which is approximately 100,000 words in length, has been written by me, that it is the record of work carried out by me and that it has not been submitted in any previous application for a higher degree.

Date 19/2/91 Signature of candidate _____

I was admitted as a research student under Ordinance No. 12 in October 1984 and as a candidate for the degree of Ph. D. on 17 February 1986: the higher study for which this is a record was carried out in the University of St. Andrews between 1984 and 1991.

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I hereby certify that the candidate has fulfilled the conditions of the Resolution and Regulations appropriate for the degree of Ph.D. in the University of St. Andrews and that the candidate is qualified to submit this thesis in application for that degree.

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**In memory of
John M. Goggin**

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Much of this work, as well as most Spanish colonial ceramic studies, is based upon the pioneer studies of John M. Goggin published after his death. A last thanks is due to his memory, although I never knew him, for building the foundation for which this research was built.

INTRODUCTION

Many advances have occurred over the last several years in the discipline of archaeology. Some of the most exciting include the use of remote sensing devices to discover previously hidden sites, in addition to satellite photography, aerial archaeology, and nuclear technologies used in the analysis of artifacts. Among these advances is the means to locate and excavate sunken ships. As shipwreck excavations normally require archaeologists with the ability to use diving equipment to reach their sites, the sub-discipline of shipwreck archaeology, maritime archaeology, or nautical archaeology has evolved as a specialised type of archaeology. That archaeological sites should be classified according to their present circumstances, is unfortunate. The relevance of sites should be defined by the nature of what they contain, not whether they lie under or above the water.

Despite pioneer efforts by George Bass to eliminate the gap between archaeology of sites found under water and just plain archaeology (1966: 15), a stigma still exists. With this said, one may question why the core of this work emphasises the finds from shipwrecks. From an archaeological perspective, finds from accurately dated shipwrecks provide unique closed uncontaminated contexts that are seldom found on terrestrial sites. The opportunity also exists for the study of intact vessels which seldom occur on terrestrial sites, thus providing the reliable foundations for accurate typologies. So far, however, many important groups of ceramic finds from closely dated shipwrecks have received little or no attention.

In addition to reluctance within the archaeological community to recognise the validity of underwater excavations, finds from shipwrecks are usually ignored if they are the result of legal salvage for monetary gain by professional treasure hunters and hobbyists. It is unfortunate that most nations allow the exploitation of historic wrecks for their monetary value. Outdated laws and traditions of salvage have also ingrained a

belief that whatever man can reclaim from the sea should be his to keep. Only recently has this issue been challenged, with historic sites being identified, by some states at least, as archaeological resources worthy of legal protection.

Without condoning the practise of treasure hunting, I decided to incorporate into this study the finds from salvaged wrecks in the Americas. The legal right of treasure hunters to recover historic shipwrecks for profit has resulted in a wealth of unstudied colonial artifacts and added a new dimension to salvage or rescue archaeology. Parallels can be drawn from terrestrial discoveries where historic sites are uncovered during construction programmes and archaeologists are given a limited amount of time to record the site. Much like watching the waste from a bulldozer, archaeologists have participated in various capacities and with various amounts of control in the salvage for profit of historical shipwrecks.

The question of archaeological morality has arisen on several occasions and is most often directed towards those who work for treasure hunters. It is argued that any participation by archaeologists in salvage efforts defeats the efforts of those attempting to preserve the sites. The realisation that archaeological representation by treasure hunters increases the chances that permits or rights will be granted by lesser informed jurisdictions is a distressing one. Until laws forbid the salvage for profit of important historical sites, however, our role as students of the colonisation period will remain a confusing one. Should we sit back and ignore new information ? There is no question that scientific, archaeological investigation of shipwrecks enables researchers to explore relationships of artifacts rather than just the artifacts themselves, bringing us closer to answering the real questions about the people who used them. Although much information will continue to be lost if this practise continues, we still cannot ignore the

finds themselves. John Goggin realised the value of shipwreck material and included examples from the salvaged 1733 fleet in his pioneer study of *olive jars* (1960).

If one feels that the credibility or integrity of finds is tainted by methods of recording or lack thereof, it must be stressed that refusing archaeological input when opportunities arise will only push the resources further away from becoming part of the historical record. As time passes and law and morals are debated, pertinent facts and the potential loss of complete assemblages become at greater risk. Although archaeological controls are limited or sometimes non-existent during excavation, information can still be gleaned from the material assemblages. It is fortunate that the lack of monetary value has at least preserved the collections of ceramics salvaged from most wrecks.

The salvage of historic wrecks may only come to an end after a complete and total legal and educational victory. But until then, putting politics aside, there may not be the chance in our lifetime to study such a wide variety of wrecks and their associated contents. It is within this framework of "rescue archaeology" that my work was undertaken, in the firm belief that much of the material I was able to record, albeit often in far from ideal circumstances, would not be available for study a generation hence.

The number of ceramics recovered from shipwrecks far exceeds the amount normally encountered on land sites, and because so many comparative examples are found within one assemblage generalisations can often be made about recurring characteristics. The large numbers of ceramics recovered, however, can create problems for curators and archaeologists. On both salvage and archaeological investigations, there have been temptations only to recover sherds considered diagnostic. Restricting the recovery of sherds to those with designs, or glazes, partially intact, or rim portions of unglazed jars severely limits the value of an assemblage.

To understand fully the implications of shipwrecks, and to appreciate the non-renewable opportunity provided by maritime catastrophes, we must record every aspect of the remaining shipwreck evidence. To illustrate the point, the *olive jar-type botija* sherds recovered from the lower hull portion of the *Nuestra Señora de Atocha* provided an approximate count of around 130 rims. As addressed in this paper, it is difficult to ascertain body size and shape in some instances from rim form, but using the basal sherds and weighing the body sherds (over 13,000) a minimum of 100 large jars appear to have been loaded with provisions and included as cargo. With an average capacity of 18 litres each jar would weigh around 53 pounds. Large numbers of full jars would have implications concerning stowage and trim, and if the contents were consumed during the voyage a re-storing of cargo must have occurred to compensate for the reduction in provisions weight.

It is distressing to find that the majority of collections visited lacked the large amounts of sherds that would normally be a part of any shipwreck assemblage. It is hoped that future excavations will not make the same mistake. Storage jars, for example, are an integral part of the ship as a functioning community. The only way to get a fairly accurate picture of the actual amount carried is to collect every single piece, of every single jar, from all parts of the wreck, and at least weigh the entire assemblage for an empty jar weight. Individually, unglazed ordinary body sherds may be relatively "non-diagnostic" but as an assemblage, the collection may provide important clues necessary for a better understanding of shipboard life and seamanship. As we develop a greater understanding of the role that ceramics played in the social structure of shipboard life then the importance of accurate intra site recording becomes even more of an integral part of our entire site appraisal, further stressing the need for an archaeological approach.

Until the discovery of shipwrecks, most surviving intact ceramics from the period of colonisation consisted of unique artistic pieces housed in museums. The intact finds from wrecks, however, include a quantity of the types of wares that were used by the everyday colonist. The common wares, those without distinctive decoration or definitive stylistic differences, have always been the most elusive yet most common types found. This study concentrates on the ceramics used by the Spaniards for storage of commodities, and common tableware. They have been the most neglected in terms of concentrated study and with the increased number of shipwrecks providing securely dated proveniences and large quantities of intact vessels, the opportunity exists for a more objective approach toward creating typological frameworks.

The finds from wrecks combined with terrestrial ceramic studies and historical research has allowed a re-evaluation of their functions and stylistic evolution, creating new insights into the role pottery played in the period of Spanish trans-Atlantic trade and colonisation. The common wares answer more questions about the everyday lives of common people and cultural influences on society to a much greater degree than any other category of artifact.

The basis of this work consists of an analysis of the ceramic collections from 17 different shipwrecks or groups of wrecks from the same disaster. The wrecks span the period from the middle of the 16th century to the middle of the 18th century. The wreck collections I have examined are housed in Britain, Bermuda, the Caribbean basin, the state of Louisiana, the state of Texas, and the state of Florida. The events surrounding each wreck^{are} discussed in Chapter 3. Of the 17 collections, 13 were recorded at first hand. Because of the scope of collecting material for this dissertation,

and the limits of time and funding, it has been impossible fully to record every collection visited. In cases where enormous quantities of ceramic material existed, representative samples were of necessity chosen at random for recording. The only non-random aspect of choosing samples occurred when a randomly selected specimen was too heavily concreted or was lacking in major components necessary for comparison with intact samples.

The study is generally limited to shipwreck material that has a quasi-official context, or those ships which were directly or indirectly associated with the Spanish seaborne empire. The wrecks consist primarily of those engaged in trade with the New World with a Spanish provenience, or those in other official contexts such as the Spanish Armada. Though the Armada collections may appear to be an exception to this, the fact that they were representative of a wide variety of vessels commissioned under Spanish rule and that provisioning and organisation of the task force was mounted from Seville, makes them an important cross-section of the various ships employed by Spain at the time.

When wreck assemblages were not available for first-hand recording, and to fill in temporal gaps, previously recorded shipwreck collections and other parallels are utilised. Little material is available for the last part of the 17th century although the late 17th century Portuguese wreck from Mombasa provides valuable comparisons. To date, there have not been any archaeologically recovered shipwrecks representing the trade between Manila and Acapulco, and therefore the inclusion of this aspect of the Spanish trade has been omitted. At present there are several commercial ventures searching for Manila galleons wrecked in the Philippines and Northern Marianas Islands.

The study of porcelain, a component of the trans-Pacific trade, has also been virtually omitted due to the greater amount of analytical attention the ware has already received. Porcelain, however, does remain an integral part of the trans-Atlantic trade. Fairly large collections exist on wrecks of the New Spain fleets, and its occurrence has sometimes proved valuable in dating associated coarse ceramics.

Because the wrecks are well spaced throughout the period in question it was possible to use an approach similar to the one used by Goggin in his pioneer study of *olive jars* (1960) and *majolica* (1966). By arranging the securely dated finds characteristic differences emerged and formed the basis of refined typologies.

Analysis of ceramic finds from land sites often includes tables and graphs illustrating type frequency, and generally this serves as an effective interpretative tool. As it is becoming more evident that variety amongst assemblages and corresponding frequencies can provide clues to the social make up of a complex, it is just as necessary to impose the same archaeological discipline in the study of shipwreck ceramics. This approach has been not been possible here because of the bias at the time of recovery on most salvaged sites. Creating quantitative analyses as representative characteristic compositions of these sites would have been counter productive. Imposing a disciplinary approach "after the fact", as some post-excavation salvage reporters have attempted, may create an inaccurate picture. It is necessary to impose archaeological standards of recovery and recording from the time of initial discovery. When finds include all evidence as part of an assemblage then, and only then, can researchers begin to utilise quantitative analysis as part of the post-excavation research.

As a result of studying the assemblages reported in this paper, and by comparing the collections with other reports on ceramics recovered from shipwrecks of the period,

it has become evident that it is now necessary to agree upon a standardised system of recording. There are two distinct approaches now in practise that seem to be divided by the Atlantic. North American archaeologists rely primarily on the analytical approach with forms represented by general shapes, and frequencies of types presented in graphic display. Written descriptions are simply too subject to individual mis-communication from both sides of the equation, the reader or the writer. Referring to old typologies has also become a common reliance.

It is necessary to record ceramic forms with conventional profile and section drawings, using photographs and descriptions as additional guides. The methods are further described in Chapter 3. As precise recording requires a great deal of time it was not always possible to draw entire collections. If a large collection of similar pieces thought to have been manufactured in the same way was encountered, a representative sample was recorded and corresponding measurements taken of all or most of the remaining sample.

This thesis is intended to serve as a guide for the identification and dating of the commonware ceramics found on Spanish colonial shipwrecks. Because the wares are also common on terrestrial sites throughout the Americas, the material will also aid in the dating of finds from sites with varying temporal ranges. Following this introduction, Chapter 2 is a brief overview of the Spanish trade mechanism and is meant purely as a brief backdrop of the period in question. Chapter 3 presents the individual shipwreck sites, the origins of the ships, and their eventual wrecking circumstances. Also in Chapter 3 is a description of the location and accessibility of the ceramic collections. The following chapters present the evolution of *olive jar-type botijas* (Chapter 4), *Columbia Plain* (Chapter 5), and other types identified on the recorded wrecks (Chapter 6).

Because ceramics are so subject to change in short periods of time, they serve as a primary dating criterion for most archaeological sites. As discussed, shipwrecks have provided a new dimension to archaeology that simply cannot be ignored. When a shipwreck is accurately dated using historical research and material remains that positively identify the wreck, the generally undisturbed environment and enormous amounts of intact artifacts provide the researcher the opportunity to study objectively an uncontaminated instant in time. The large number of finds should enable researchers to create reliable typologies and accurate generalisations.

*SPANISH SEABORNE TRADE
WITH THE AMERICAS*

The subject of Spain's colonisation of the Americas has received considerable attention by historians over the last century including contributions by Parry (1963, 1966), Elliot (1963), Hamilton (1934), Haring (1918), Lynch (1964, 1969), Morrison, (1974), Chaunu and Chaunu, (1955 - 1959). Consisting primarily of the analysis of the voluminous amounts of records that were kept by the Spanish bureaucrats, their work has served as the primary backdrop by which we view the period. More recently, however, two significant factors have rekindled interest in the period of colonisation and opened the subject up to re-evaluation: the planning for the European 500th anniversary of the discovery of America, and the current work on archaeological sites which date to the period of early colonisation.

For the Americas and Spain, the 500th anniversary is more than a mere celebration of the past. For the Americas it has come to represent a renewed interest in a cultural heritage that has often been overshadowed and ignored. For Spain, the anniversary comes at a time of renewed vitality, national pride, and domestic growth that have been spurred by greater economic and capitalistic freedom. The common factor between the two societies is the colonisation, after Columbus' discovery in the late 15th century, of the New World. The memories of Spain's conquests are never distant in the areas of colonisation today and the culture of Latin America, although detached from the mother country, is still predominantly Hispanic.

Over the last several decades newly discovered remains of colonial settlements, either abandoned or occupied to this day, have shed new light on the early years of development. In addition to the land-based sites, shipwrecks have provided uncontaminated closed contexts of the most dramatic and important aspect of the colonisation era: maritime trade. Since much has been written from a historical perspective

on the Spanish seaborne trade with the Americas, a brief overview will be presented concerning Spain during the colonial period. Chapter 3 will address the circumstances behind the shipwrecks investigated in this study.

The first European explorer to see the New World, Christopher Columbus, was a Genoese working for Spain under a standard contract of the time to "discover and acquire islands and mainland in the Ocean Sea" (Parry, 1966: 19). The fact that Spain was his national sponsor was more due to chance and enterprise than Spain's mastery of the oceans. Spain was not Columbus' first choice as a sponsor nation. He unsuccessfully sought royal support from Portugal, France, and England before gaining, with the help of a high Spanish official, the royal Spanish approval (ibid.: 19 - 20).

Spain had always relied on her foreign allies for much of her trading throughout the Mediterranean and Columbus' own origins come as no surprise as the Genoese went everywhere in Europe and had close commercial ties with Seville and Lisbon (Parry, 1966: 19). Spain in the late 15th century was an empire that relied on the resources of its combined allies for many of her militaristic and economic needs. The union of the crowns of Aragon and Castile through the marriage of Ferdinand and Isabella (Elliot, 1963: 15) marks the beginning of the modern age of Spain and the beginning of a New World. The empire which the Spanish crown ruled was a *monarquía*, states under the same sovereign but with each of the separate units having individual parliaments (Kamen, 1988: 6). Domestic government was achieved by a similar means. A strong emphasis on the bureaucratic process, chain of command, and documentation pervaded all aspects of society.

Multinational and multicultural, over the decades of colonisation, the Spanish

European empire was constantly afflicted with domestic revolt, cultural revolutions, and international conflicts. The costs of such an empire were enormous in both diplomatic and monetary terms, and the subjects bore the burden of payment. It was against this backdrop that Columbus set out on his voyage and it was in the midst of this international alliance of separate states under a single crown that he made his momentous discovery.

Although he failed in his hope to find a seaward route to Asia, Columbus created the potential for the exploitation of a vast new territory undiscovered by Europe. His discovery secured the continent for the crown and gave Spain a head start of over 100 years in European occupation of the American continents. For almost three centuries, Spain sent ships, soldiers, administrators, clergy and settlers across the Atlantic to conquer, colonise, convert, and ship home valuable commodities of her newest territories. For Spain, it was a partial means to support a financially desperate international monarchy. For the conquerors and colonists it was an escape from the poverty of the homeland and a chance to build a legacy of riches. For the native American cultures it was the end of the world.

Following the discovery, conquest and exploration of the New World was immediately organised, and folded in the thick Spanish bureaucracy. The administrative arm of government that was created and put into effect on February 14, 1503 was called the *Casa de Contraction* (House of Trade) whose purpose was to facilitate, control and encourage trade to the West Indies (Weddle, 1978: 63). The city of Seville, although not the best suited port, was chosen as the centre for all trade that came and went to the New World. From Seville a trade system was developed that changed only slightly over the next 300 years.

The first task of the maritime conquest was to develop dependable routes and ports of call along the way and in the Indies. Upon leaving the Iberian peninsula the ships would head south to the Canaries which had been abandoned by the Portuguese after the Portuguese war of succession in 1475 and colonised by the Spaniards in the 1490's (Parry, 1966: 18). Sailing south and then west to take advantage of the prevailing trade winds, the Spaniards would eventually sight the easternmost chain of islands near Dominica, take on water if necessary, then sail to the port of Santo Domingo on the island of Hispaniola which was founded by Columbus. The port city which is the modern capital of the Dominican Republic served as the first traffic hub in the New World. Along with the beginnings of government in the Indies, the future fate of the native Americans was sealed with the arrival of Frey Nicolás de Ovando in Hispaniola in 1502 who decimated the local inhabitants with war and systems of forced labour (Parry, 1966: 26).

Trade and conquest have been defined as going through three overlapping stages: an island stage, a Mexican stage, and an Isthmian or Peruvian stage (Parry, 1966: 103). The American ports of call became important centres of commerce with Santo Domingo dominating shipping in the early stage until about 1520 (*ibid.*) with the port of Veracruz founded by Cortéz serving Mexico, and on the Isthmus Nombre de Dios or Portobello serving as the link to the South American mainland, and Havana as the last homeward stop in the New World.

After the initial confiscation of valuables through conquest of the native peoples by the conquistadores, the extraction of wealth from the Indies was hard fought. As the struggling colonies began to develop exports including hides, dyestuffs, pearls, and sugar, the appetite for gold and silver remained the principal driving force behind the colonial ventures (Elliot, 1963: 183). The colonists could survive on the native

foodstuffs but after the first few years of hardships they demanded, and had the means to pay for, the diet to which they had been accustomed at home (Parry, 1966: 34). This meant that a great deal of the commodities shipped from Spain thereafter focused around wheat, cattle, oil, and wine in considerable quantities (ibid.).

As the conquest moved from the islands of the Caribbean to Mexico and the mainland, attempts were made to establish vineyards and olive groves which took time to come into bearing (Parry, 1966: 87). The only places where grapes and olives were produced in quantity in the sixteenth century were the irrigated valleys of Peru, with the first crop picked in 1551, with olive oil production reaching a commercial scale by the end of the century (ibid.). Seeking to eliminate the competition from the Indies, the Seville shippers gained legislation prohibiting the extension of both vineyards and olive groves in 1602 (ibid.), thus enforcing dependence on Seville.

Survival in the Indies, therefore, depended on the continuous process of trade with the homeland. To pay for the comforts of home, the colonists depended on the export of New World commodities back to Spain which required a tedious and dangerous sequence of steps before the cargoes arrived at Seville. As the foothold in the New World became a permanent fixture, an effective trading system developed.

The system of regularised treasure fleets began in the 1560's and the chosen city of Seville and its port of San Lucar enjoyed a virtual monopoly (Elliot, 1989: 19), although during short periods other ports were involved (see Elliot, 1963: 182). Two fleets left the port each year, if all went well, with the first called the *flota* which left in May and headed for Veracruz in Mexico, and the second called the *galeones*, leaving in August headed for Nombre de Dios or Portobello in Panama (ibid., 1989: 19 - 20). Both fleets carried commodities for the colonists including wine, olive oil,

grain, weapons, tools, books, clothes, and other items (ibid.) to be auctioned at trade fairs upon arrival.

The annual size of the combined fleets averaged around 60 or 70 vessels (ibid.) but varied substantially from year to year depending on economic, political (Elliot, 1963: 185), or natural circumstances. A detailed study has been conducted on the commodities shipped, the frequency of sailings, and the New World port traffic by Chaunu and Chaunu (1955 - 1959). The series of steps involved in the mechanism of trade after the fleets arrived in the New World are aptly described by Elliot:

"Once they had unloaded their cargoes, both the fleets would winter in the Indies. The trickiest problem was to arrange the timing of the return journey to Seville. The pattern was for both fleets to rendezvous at Havana and start back with their precious silver cargoes in the early summer, before the hurricane season arrived. To do this, the Mexican *flota* had to leave Veracruz in February, laden with silver and cochineal and other goods from Mexico to make its three-to four-week voyage against the trade winds to Havana. The isthmus fleets, the *galeones*, had a much more tricky assignment, because it had to pick up, while en route for Havana, the silver coming from the Peruvian mines. Its voyage therefore had to be synchronised with the transport of silver all the way from the Potosí mines to Panama. This in turn depended, in the final analysis, on the rainfall in Bolivia. If the rains came late, there was insufficient waterpower for the mills to prepare the ore and turn the silver into bars. From the point of view of the return journey of the fleets, the Peruvian silver should have been in Panama by March in order to get to Havana before the hurricane season started. But usually the rain was so delayed in the Bolivian altiplano that the silver only reached Panama in May. Once the rains had fallen and the silver had been minted, a great llama train carried it down from the mountains on the fifteen-day journey from Potosí to Arica. At the port of Arica the silver was transferred to ships, which took eight days to reach Callao, the port of Lima. Here it was transferred into three or four special treasure ships, which took twenty days to reach Panama. At Panama it was taken out of the ships, and placed

on the backs of mules, and the mule train took four days to cross the isthmus, where the *galeones* were waiting at Nombre de Dios to load the silver. They then sailed for Havana and joined up with the Mexican *flota*; with luck, the combined fleets were back in Seville by the late summer or early autumn." (1989: 20).

In addition to the long journey of the silver from the South American mines, by the late 16th century an annual shipment of Asian silk, spices and porcelain was dispatched from the Philippine port of Manila across the Pacific (see Schurz, 1939). The exotic oriental cargos began their journey on junks travelling down the Yang-Tse river in China to the Spanish trading port of Manila. After trading with the Spanish merchants the Asian goods were loaded onto the galleons which crossed the Pacific, sighting the coast of Northern California heading south to the Mexican port of Acapulco. After unloading in Acapulco, the cargo was then packed on mules and transported overland to the gulf port of Veracruz where it was consigned to the *flota* bound for Havana.

Once the combined fleets had gathered at Havana and taken on provisions, the final and most treacherous part of the voyage began. As already described, the fleets were often late and dangerously close to hurricane season. Without the benefit of any weather forecasting, the dates of sailing were often left to chance. Even in fair weather the route has little sea room for errors in navigation. The narrow passage south of the Florida Keys and up the Bahama channel would lead the ships into the Atlantic where they might hope to spot the low lying islands of Bermuda. At any point along the way severe storms or hurricanes could bring disaster. Once in the open Atlantic they would strive to reach the Azores before supplies ran too low. In the open ocean, long lasting calms could starve the passengers and crew.

In addition to adverse weather, outbreaks of war in Europe could unleash an array of privateering in the Atlantic (Parry, 1966: 251) while piracy was always endemic. In response to this, and to keep a check on the massive amounts of bullion being shipped to Spain, taxes were levied on all cargoes crossing the Atlantic which supported the provision of armed escorts (Elliot, 1963: 185). Even if the fleets managed to survive the ocean crossing, when they reached the Spanish coast, they were still prey to the ominous sand bar at San Lucar.

At the centre of life in Seville and the Indies there remained the *Casa*. The role and importance of the *Casa* went far beyond that of a customs and record keeping house. It served as a ministry of commerce, a school of navigation, and a clearing-house for colonial trade (Weddle, 1978: 65). The mechanism of trade, well established, proved to be relatively effective, but the highly regimented process suffered a slow evolution of change bred by the well ingrained Spanish bureaucratic mentality. The high Spanish officials were elderly, status-conscious officials "tenacious of tradition and legalistically inclined" who kept things functioning in well documented order, while keeping it static (Elliot, 1989: 17). It cannot be overstressed how important the resistance to change is when attempting to understand Spanish attitudes. Structure was the key to existence and a sign of success.

Seville was ill prepared to become the shipping centre of the world, let alone Spain. Because of the *Casa*, by royal decree, a monopoly was built on New World trade that had far-reaching social and economic effects for the city and all of Castile. Growth in the early years was staggering. The stimulus of trade enabled the city to grow from around 70,000 inhabitants to a city of some 150,000 by the first part of the 17th century (Elliot, 1989: 18). Because of the enormous wealth brought back from the colonies, the port and its purpose built galleons flourished. The requirements of trade

went beyond more ships and crews, and the enormous rise in commerce called for an extensive management apparatus to supply, regulate, and govern the system provided by the *Casa* (Weddle, 1978). To supply the colonies and ensure maximum rewards for the homeland, a virtual dependence on the motherland was created and enforced.

The people and merchants of Seville itself could not fulfil the massive requirements of trade, and the gap was quickly filled by foreign merchants and traders resident in Seville, to the point that some have argued that Seville was no longer really a Spanish port (Kamen, 1988: 32). Passing before the eyes of the labouring peasantry, the riches from the Indies went straight to the foreign merchants. The spoils also served as a major source of income to finance war and the king's exchequer.

The onslaught of foreign traders, and Spain's lack of a dynamic manufacturing base made foreign goods a large part of the total export (Parry, 1966: 236; Deagan, 1987: 20; Haring, 1964: 113). A natural exception would be commodities produced in large quantities and accessible in Seville such as ceramics, because the natural resource of clay from nearby rivers and the local ability to manufacture was available in the vicinity. Because the *Casa* was responsible for the government's trade with the Indies as well as private enterprise, huge stores were kept on hand to supply the ships and colonies. Building, fitting, and supplying the fleets was big business and the mass production of goods, made to specifications set by the *Casa* were the very lifeblood of the fleets.

Rules and regulations set forth by the *Casa* were strict and certain requirements had to be met for ships bound for the Indies. Because so much could be gained from a successful voyage to the Indies, rules were often broken. Items such as spare rigging,

and pitch for caulking were required before the ships were allowed to sail. Archaeological evidence from shipwrecks has shown the deviations from the prescribed standards of armament, stores, and cargo. Prior to the ordinances of 1552, captains sometimes borrowed rigging, artillery, and sails from other ships to display for the inspections (Weddle, 1978). In these circumstances, recorded cargoes may not even be close to what the ships actually carried.

Deviations from the historical record can be expected in almost every category. Exorbitant prices meant smuggling was an inherent part of life. Although practically everything that was official was recorded, very little documentary evidence has been uncovered detailing what must have been one of the greatest basic needs: ceramic storage containers, and basic cooking and table wares. It has become clear that regulations and records of transactions only provide a portion of the overall picture. The *Casa's* strict ordinances may only be how things were supposed to be, rather than what they were.

Although the Spanish economy probably experienced a benefit from the increased commercial activity and new-found wealth from the Indies, its full effects are still under discussion (see Kamen, 1988). As in any economy, Spain experienced periods of expansion and contraction that had significant effects on its New World trade. The first century of trade was one of great achievements and increased prosperity. The 17th century, on the other hand, is considered to be a period of severe economic decline (Deagan, 1987: 21; after Parry, 1963 321 - 61). Although the trade is recognised to have stimulated Spanish industry, the bullion income in the 17th century went primarily to finance state expenditure and the servicing of massive debts. As the years passed, the disadvantages of Seville finally mounted and the volume of trade shifted to Cadiz which by 1680 was recognised as the official port

of the Indies, and in 1717 the Casa and all the administrative functions were moved there (Parry, 1966: 286).

By the 18th century the trade had begun to recover and was burgeoning by the latter part of the century. In 1789 the convoy system was stopped although the trade still continued strong (Parry, 1966: 287). As a result of war, the Spanish trade to the Indies was finally put to an end in 1797 and was never restarted (Parry, 1966: 370). By 1898 Spain had lost the last vestiges of its American empire (Kamen, 1988: 4).

Students of the colonial era have relied on the surviving records of the bureaucratic process housed primarily in the Archives of the Indies in Seville. In addition, archaeological investigation of Spanish settlements in the New World have led to a better understanding of the lives of the colonists. As described above, the trade and colonisation of the New World depended on a long and dangerous nautical passage which delivered supplies to the Indies and brought the spoils of conquest back to Spain. Over time the Spanish sea routes became littered with the remains of ships and cargoes each representing a unique archaeological resource.

The collections from shipwrecks recorded for this study and discussed in Chapter 3 represent only a few of the casualties. History generally focuses on the bigger picture, on the affairs of kings and the fates of nations. The finds from shipwrecks, with emphasis on the ceramics used to trans-ship the diets from home and the common table wares of the average colonist or seaman reflect a smaller and more personal universe.

*CATALOGUE OF SHIPWRECKS
AND THEIR CERAMIC COLLECTIONS*

SHIPWRECK SITES

The primary source of archaeological evidence used for this study consists of 17 different collections of ceramics from colonial era shipwrecks. Thirteen of the collections were visited and are incorporated here. Some of the ceramics were recorded on site while excavations were in progress. Site reports, documentary evidence and ceramic reports are also considered in this section. The sites consist of singular shipwrecks or groups of two or more vessels wrecked in the same circumstance. Only one of the wreck assemblages (the Spanish Armada) was archaeologically excavated and recorded from the start to finish. The other material was either excavated archaeologically after modern salvage, or recovered purely from salvage operations, with archaeological supervision as required by governing agencies.

In studying the period of exploration and colonisation of the New World it has become nearly impossible to ignore the vast amounts of information that can be gleaned by studying the finds from the salvage of these important vessels. As discussed in Chapter 1, the use of this controversial material has greatly enhanced our knowledge of the period in question. John Goggin realised the importance of shipwreck finds and incorporated examples from salvaged wrecks in his pioneer study of *olive jars* (1960). Unfortunately, due to a variety of factors, large collections of artifacts have been left unstudied. The goal of this researcher was to seek out the numerous unstudied collections, to assess their integrity, to record the finds, and to combine the information with published sources.

When a shipwreck has been identified and its date secured, the ceramic finds become an invaluable source of archaeological information. The majority of wrecks

include large enough assemblages of similar types so that generalisations can be made about recurring characteristics which can aid in comparative analysis. The large quantities of ceramics, however, often create problems of curation and storage. Entire ceramic collections are often left stored and unrecorded for years. Some of the ceramics recovered by Mendel Peterson and Teddy Tucker in the 1950's and 1960's, for example, have been relegated to the Smithsonian's "deep storage". In most cases the collections encountered throughout the study had been in storage or moved one or more times. The greatest obstacle in attempting to study collections that have been recovered months or years before is usually locating them. Once the collections were located and the tagging and bagging methods were deciphered it became clear that there was a mine of information that had been left untapped.

In general, because of the usually enormous quantity of finds associated with shipwreck discoveries, the necessary resources for proper conservation and curation are insufficient. Unfortunately, ceramics tend to be the most neglected category of artifact because of the lesser monetary value of sherds and because a common perception is that pottery requires the least conservational care. To add to the problem, in addition to the large amount of unstudied material that has already been recovered from Spanish wrecks, an enormous quantity of colonial artifacts will continue to surface due to the success of recent technological advances used in locating shipwrecks.

The validity of using shipwrecks for securely dating ceramic traditions is dependent on the correct identification or accurate dating of the wreck. Generally, because of historical documentation, the presence of dated artifacts, and the non-contaminated

environments of wrecks, identifications are usually secure. Included in this section, where applicable, is the evidence behind decisions to include certain wrecks which may not have been identified with certainty.

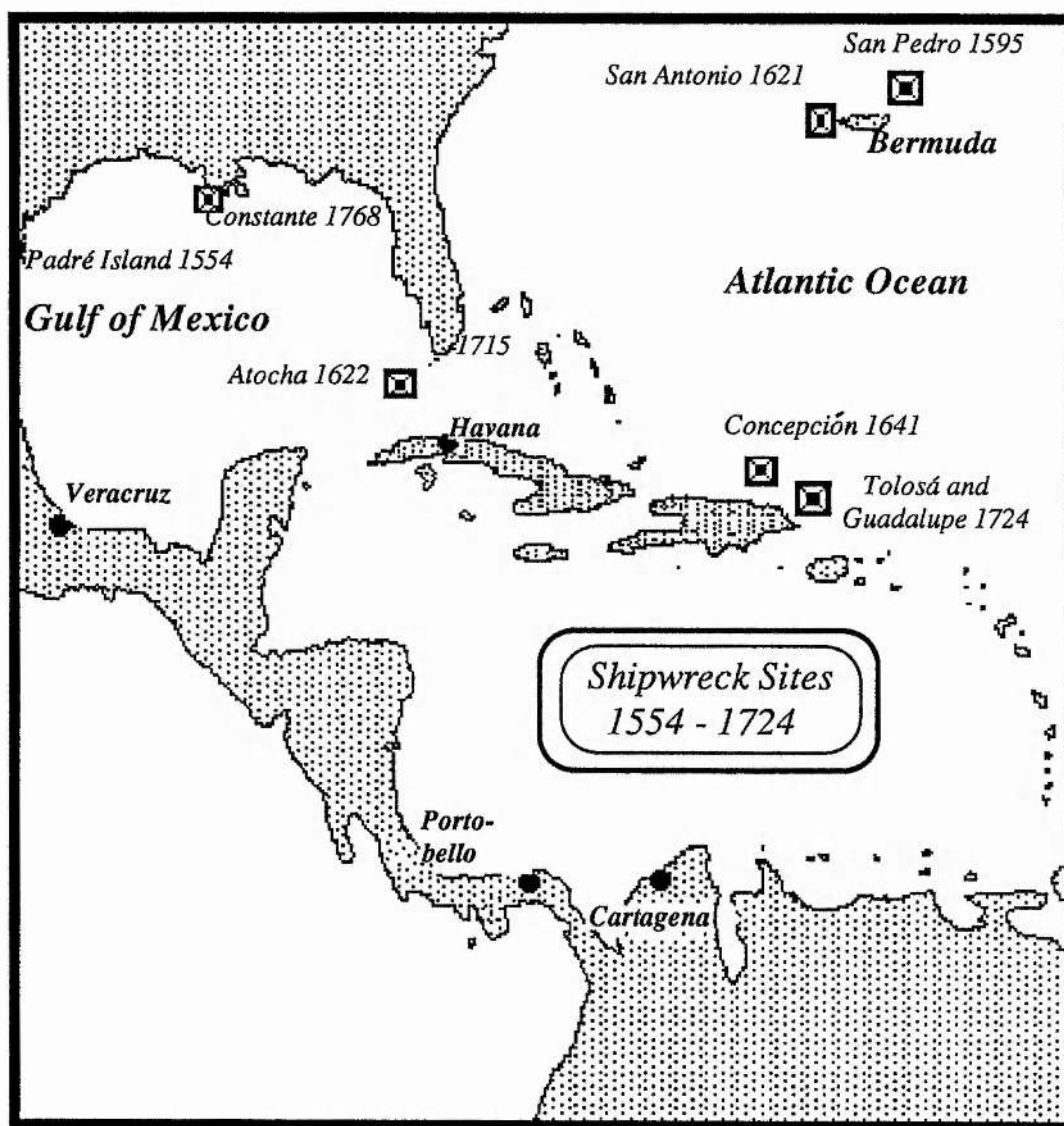


Fig. 3.1. Shipwreck sites in the Americas.

THE PADRÉ ISLAND WRECKS OF 1554

THE WRECKS

With the possible exception of the undated but probably early wrecks on Molasses Reef and Highborn Cay (Keith, 1987), the earliest excavated shipwrecks in the Americas are those of three Spanish treasure ships wrecked in a hurricane off of Padré Island in the gulf of Mexico in 1554. The ships were part of Captain-General Bartolomé Carreño's flotilla that left Spain for various ports in the Indies on November 4, 1552 (Weddle, 1978:5). From archival research, they are identified as the *San Esteban*, *Espiritu Santo*, and *Santa Maria de Yciar* (Arnold and Weddle, 1978).

The three ships finally arrived at the fort (outpost) of *San Juan de Ulúa* in the bay of modern day Veracruz on March 5, 1553 (ibid.:11). The port seems fairly ill-suited as a primary loading and reloading port for Spanish colonial shipping. The entrances to the bay are treacherous, surrounded by shallow offshore reefs, and the harbour is often slammed by "*El Nortés*", the gale force winds from the north which can descend suddenly and without warning. Mooring much as the modern locals moor fishing craft, the galleons would tie off on giant rings on the leeward wall of the island fort after anchoring their stern. A later version of the Spaniards' island fort and the giant rings used for mooring (Plate 3.1) are still in existence.

Opting not to wait for a flotilla escort as the ships had been detained for over a year at the port, the three ships set sail for Havana on April 9, 1554 and were consequently wrecked on the shore of present day Padré Island on the western shore of the Gulf of Mexico, now part of the state of Texas in the United States.



Plate 3. 1. Mooring rings on the fort of San Juan de Ulúa, Veracruz, Mexico

At the time of the disaster, the empire of Charles I was extensive and included the Netherlands, Belgium, Germany, Austria, Italy, and Spain in the Old World, and the Greater and Lesser Antilles, Mexico, Central America, and most of South America-*terra firma*, with the exception of Portuguese Brazil in the New World (Skowronek, 1987:103). In addition to a vast European empire, in a mere 60 years since initial discovery Spain had gained an unassailable foothold into the New World.

REFERENCES

The main reference for the 1554 wrecks is *The Nautical Archaeology of Padré Island* by Arnold and Weddle (1978) in addition to a report by Olds (1976). The ceramic collections have been reported by Skowronek (1987).

THE COLLECTIONS

The collections from the Padré Island shipwrecks have been the subject of several lawsuits over the years, and the finds are now housed in at least two different locations. The largest grouping is in the Corpus Christi Museum in Corpus Christi, Texas. Access to the finds was permitted by Dr. Herman Smith and a brief visit was undertaken in September 1989. The ceramics are stored in artifact drawers which at the time of the visit had not yet been inventoried.

THE SPANISH ARMADA OF 1588

THE WRECKS

The attempted conquest of England by the Spanish in 1588 resulted in a devastating failure in battle and the loss of many ships on the shores of the British Isles. Accounts of the Spanish crusade have filled history books since its defeat. Three of the most famous Armada wrecks (the *Trinidad Valencera*, *El Gran Grifón*, and the *Santa Maria de la Rosa*) have been recovered archaeologically by members of the Scottish Institute of Maritime Studies at the University of St. Andrews headed by Dr. Colin Martin. Other wrecks include the *Girona*, and the *San Juan de Sicilia* also known as the Tobermory wreck (Martin, 1979: 279). Three additional wrecks from the Armada have recently been

discovered in Ireland (Martin, pers. comm.).

Four of the five wrecks yielded pottery. Ceramics from the Spanish Armada wrecks directly relate to the finds from wrecks in the Americas because of the "official" nature of the Indies trade and the fact that the Armada was supplied from the same ports as the ships engaged in the New World trade.

REFERENCES

Several books and academic reports have been written about the Armada of 1588. A recent publication entitled *The Spanish Armada* by Martin and Parker (1988) combines historical accounts with the finds recovered from shipwrecks and serves as the main reference. The study of pottery from the Spanish Armada of 1588 by my thesis supervisor Colin Martin (1979) has served as a model from which to pattern the recording and research of the shipwreck collections. It serves in many ways as the milestone in the comparison and interpretation of Spanish colonial ceramics recovered from shipwrecks.

Initially published in the *International Journal of Nautical Archaeology and Underwater Exploration* (1979, 8.4: 279 - 302), "Spanish Armada Pottery" includes ceramic material recovered from all pottery-yielding Armada wrecks excavated in the ten years preceding Martin's publication with the greatest amount coming from the *Trinidad Valencera* (ibid.). The pottery was grouped into a broad classification of types without specific finds references, although the site from which each sample was derived was identified (ibid.). Examples from Martin's publication are used throughout the text with some additions recovered after his publication.

THE COLLECTIONS

The majority of the Armada material is held by the Ulster Museum in Belfast, Northern Ireland. A part of the collection is currently being studied at the Scottish Institute of Maritime Studies at the University of St. Andrews, Scotland. The collections at the Institute were studied and recorded at first hand.

A LATE 16TH CENTURY WRECK IN BERMUDA

THE WRECKSITE

Over the centuries the isolated group of islands far north of the Bahamas that comprise Bermuda have ensnared hundreds of ships attempting to navigate the Atlantic. During the centuries of New World exploration, while attempting to ride the favourable easterly currents, Bermuda claimed the lives and cargoes of dozens of returning ships as they tried to avoid the low lying reefs surrounding the islands. Since the colonisation of Bermuda in 1609, the colonial accounts have provided many details of the fates of wrecked ships and the misfortune of survivors.

One unidentified ship wrecked before the islands were settled by the shipwreck survivors of the *Sea Venture* in 1609, provided one modern day resident the fulfilment of a lifelong dream. In addition to a small fortune in valuable artifacts the earliest examples of *olive jar-type botijas* encountered in this study are now in the private collection of Mr. Harry Cox of Bermuda.

The finds were in a sand pocket of artifacts discovered off the outer reefs. Unfortunately, no coherent hull structure was ever discovered. The wreck was not positively identified although there is strong artifactual evidence that it belongs to the late 16th century, and is either of Spanish or Portuguese nationality. Primary sources for dating the site to the 1570's were nine Portuguese gold cruzados dated in the period 1521 - 1580 (Cox, 1968: 33). Other finds included an astrolabe, gold bars, an elephant tusk, gold jewellery, and gold chain.

In addition to the finds reported by Mr. Cox, a near intact porcelain brimmed bowl recovered from the same wreck site was identified as Wan-Li by Colin Martin (pers. comm., 1986) which supports a late 16th century date. The rim border and serpentine or "dragonesque" designs resemble a piece recovered from the *Trinidad Valencera* from the Spanish Armada (1588) (Martin, 1979, Fig 13. #99:297 and Fig. 14. #98: 298). Wan-Li has a date range from 1573 -1614, and in conjunction with the terminus post quem of the coins it is reasonable to assume the wreck occurred in the late 16th century.

REFERENCES

The story of Mr. Cox's finds of July 26, 1968 was reported in the *Bermudian* (Vol. XXXIX No. 9, November 1968) where he gives an emotional account of his exciting discovery.

THE COLLECTIONS

Mr. Cox is open to researchers wishing to study his finds if they can survive repeated attacks by a pair of pet geese that roam the property and attack strangers. In addition to

the ceramics recorded for this report, Mr. Cox has a collection of over a dozen bronze breech loaders from another 16th century wreck.

THE SAN PEDRO (1596)

THE WRECK

Profiting from shipwrecks is a deep-seated Bermudian tradition. Following that tradition is the famous diver and salvor Mr. Edward "Teddy" Tucker. A colourful storyteller, Mr. Tucker and his partner Don Canton have been working the reefs off Bermuda in search of wrecks for almost forty years. Accompanied by members of the Smithsonian Institution's now defunct Underwater Archaeology Department then headed by Mr. Mendel Peterson, Mr. Tucker and crew salvaged several significant historical wrecks from the 1950's to the 1970's. Mr. Tucker is still active in salvage and underwater exploration today and is very receptive and helpful to students of maritime history.

One of the most famous of Mr. Tucker's finds is reported to be the remains of the *San Pedro* which was wrecked off the reefs of Bermuda in 1596. Tucker and Canton first explored a sand hole in the outer reefs in 1950 when they salvaged "six big guns and a big copper bucket" which were subsequently sold to the Bermuda Historical Monuments Trust (Zuill, 1956: 57). The two men did not return to the spot again until August 1955 when they worked for a number of days recovering a substantial amount of artifacts including a great deal of treasure. The most famous item recovered was a beautiful emerald pectoral cross containing seven emeralds.

Although the exact identity of the wreck is uncertain, there are several indications which support a Spanish provenience and a date range in the late 16th century. In addition to the ceramics included in this report, the following items were recovered from the wreck:

- 1 gold cross with seven emeralds.
- 1 gold bar weighing one kilogram, with Spanish stamps on it.
- 2 gold ingots with Spanish stamps, weighing 23 ounces and 19 ounces.
- 2 gold slugs cut from a bar, and stamped.
- 3 gold buttons set with pearls.
- About 1,000 pieces of eight, including some minted in a (then) newly opened mint in Mexico City.
- About a dozen French coins, one dated 811 from the reign of Charlemagne, another dated 1587, and others with other dates.
- 1 Carib spear with carvings, made of black palm wood.
- Carib bows, also made of black palm wood.
- Indian pottery
- Over a dozen matchlock muskets.
- Rapier handles.
- Metal sword handles.
- A chunk of paint weighing eight pounds.
- 6 big guns (discovered in 1950).
- 4 swivel guns.
- Cannon balls, musket shots.
- Bronze hand grenades.
- 1 pair of navigational dividers, of bronze, or brass alloy.
- 1 inkwell and quill holder of terra cotta.
- 2 mercury timing glasses.
- 2 anchors, one about 12 feet on the stock shank(?), the other eight feet.
- 4 ship's sounding leads.
- About 3 honing stones.
- A set of caulking tools- scrapers, seam picker, caulking iron.
- China from the Chinese empire, possibly a rice bowl. Broken into three or four pieces.
- Many pieces of glazed pottery, with a high glaze.
- Flint ballast, coming originally from France or Cornwall, but having been on a beach in the West Indies for a year or so according to the British Museum.
- Pieces of Lignum Vitae. Thousands of pearls, now down to seed (Zuill, 1956: 65).

The above list of artifacts recovered is by no means conclusively Spanish. Mr. Tucker is aware of three Spanish vessels that were lost off Bermuda during the years 1593 to 1609

(Zuill, 1956: 58). Some of the evidence as to her origin and late 16th century date are as follows:

The flint ballast (identified by the British Museum as originating from either Cornwall or from France) was reported to have been lying on a beach in the West Indies for a year or so before being loaded into the ship (Zuill, 1956: 59). This evidence may simply suggest that the ballast was not in its original hull. Ships were often "rummaged" (Arnold and Weddle, 1978: 19) which involved removing the ballast from the hold and laying it on the beach so the surf could wash away the waste residue, while the interior hold was washed with vinegar(ibid.).

The famous emerald cross recovered closely resembles a cross recently recovered from another Spanish ship the *Nuestra Señora de Atocha* wrecked in 1622. The gold bars have Spanish markings, with the largest bearing the name "Pinto" and stamped with the name Don Hernandez (Peterson, undated excerpt: 44). The majority of silver coins are reportedly from Spain's New World mints of which one *real* is dated 1592 (ibid.). A bronze mortar recovered from the wreck was signed "Petrus Van Den Ghein Me Fecit 1561" identified as a member of a family engaged in the mortar manufacturing business in Belgium (ibid.).

The recovered guns appear to "have characteristic contours" of late 16th century guns although all were different from one another in shape (ibid.). Peterson writes that the assortment of guns was so varied that it may suggest the "catch-all" armament of a pirate or privateer (ibid.). With the added evidence of the French coins (see above list of

artifacts) and French pewter found on the site, it may indeed be argued that the wreck is that of a French pirate or privateer carrying Spanish plunder. More likely, however is the possibility that the ship was a "Spanish" ship which had a foreign origin, and was captured or pressed into the *flota* service. A late 16th century context is not contradicted by artifactual evidence based on the dateable artifacts as well as the fact that most shipwrecks that occurred after the colonisation of Bermuda in 1609 were duly reported in the colonial accounts.

The probability that the remains are that of a wreck directly associated with Spain's monopoly on New World trade and controlled by the *Casa de Contraction* in Seville is strong. For example, of the 49 ships listed in the *flota* that arrived in Portobéllo (Nombre de Dios) the 23 April 1596, over half the origins were from countries other than Spain, including five *naos* with French origin (Chaunu and Chaunu, 1956: IV; 8 - 9). The mystery of the *San Pedro* may also be explained by possible confusion in the Archives records.

Also engaged in the New World trade was another *San Pedro*, originally a French ship, which in the *armada* and *flota* of Capitan General Sancho Pardo Osorio left Spain in February 1594 and arrived in Portobéllo (Nombre de Dios) 9 May 1594 (Chaunu and Chaunu, 1955: III; 526). Captained by Pedro Nunez de Bohorquez, this *San Pedro* was destined for Rio de la Hacha, and is listed as being a new vessel of 55 tons (*ibid.*). Whether she was newly acquired by Spain or newly built is not known. If the identity of the two ships somehow became confused, French items on the "Spanish wreck" of the *San Pedro* fits nicely. Both ships in any case seem to disappear from the record, as neither is listed

in the following ten years' entries of Chaunu and Chaunu's (1955) compilation of vessels.

Another *San Pedro* was a 320 ton, 11 year old Biscayan *nao* captained by Hieronimo de Porras and co-owned by Martin de Villa (Chaunu and Chaunu, 1956: 25). In late 1595 she left Spain with the New Spain *armada* and *flota* of Captain General Pedro Menendez Marquez carrying 210 *quintales* of mercury (Chaunu and Chaunu, 1955: 554) destined for the New World mines. It is probable that she sailed directly to Veracruz, Mexico where between 1591 and 1600 over 100,000 tons of goods were traded (Chaunu and Chaunu, 1957: 97 charts) including the overland transfer of goods from the Orient. In Veracruz, while moored off the Spanish stronghold San Juan de Ulúa, she probably loaded a cargo of Chinese trade porcelain that had come overland from Acapulco after its Pacific crossing via the Manila galleon trade.

Once the *flota* had been refurbished, repairs made and trade goods loaded, the convoy left for Havana to assemble for the return trip to Spain. For some reason this *San Pedro* left her cargo of silver in Havana (Chaunu and Chaunu, 1956: 29 #35). Lack of silver bars recovered from the *San Pedro* site in question fits this explanation nicely. Departing in mid July 1596 with the New Spain *flota* of Captain-General Pedro Menendez Marquez and the *armada* of S.M. Captain-General Bernardino de Avellaneda, she was the only ship lost in her *flota*, and reported wrecked with merchandise in the Bermudas (ibid.:22).

In 1987 the Bermuda Maritime Museum's Institute of Maritime History and Archaeology, accompanied by this researcher, attempted to relocate the remains of the *San Pedro*

site in order to determine the extent of hull remains and hopefully uncover more positive evidence as to her true identity. Reports by the Smithsonian Institution's Mendel Peterson (Cathy Hoyt, pers. comm. 1987) suggested that there were substantial structural remains which might help in determining a more secure identification of the wreck. After a few days of visual searching, a sand hole was spotted with one small curved timber and three small hand-dug pits. The location of the hole seven miles offshore on the inner side of the reef matched the approximate bearings given to the museum by some of the early salvors. After close examination, the discovery of an encrusted diver's fin, and the identification of a layer of flint ballast stones covering most of the hole, it was concluded that it was the same site excavated by Teddy Tucker and Don Canton in the 1950's.

The lone timber was unattached to any other structure, and the only other wood remains were three small curved timbers, each about two feet long lying side by side, and what appeared to be the partial remains of a gun carriage. Over a period of two weeks the site was mapped and a test trench was dug in hopes of discovering more organic remains. It became clear that the site had been completely excavated in the 1950's and any organic material left on the site had decayed. The only artifactual remains of any kind, were a few small pieces of porcelain which were not positively identified. Their presence on the site however, supported further that we were examining the correct location.

Although the re-examination of the *San Pedro* did not provide any more clues as to the wreck's identity, the ceramic assemblage now housed at the Bermuda Maritime Museum does not contradict a late 16th century Spanish provenience. The absence of silver bars on the site also fits nicely with the documentary evidence that the *San Pedro's*

shipment of silver was left in Havana. It seems unlikely that a successful pirate ship returning home would be lacking the massive amounts of silver bars usually carried by the trans-Atlantic galleons. The large numbers of porcelain sherds is also associated with the type of cargo that would be associated with trade from New Spain and their identification as Wan-Li supports a late 16th century context.

REFERENCES

Many of the finds from the *San Pedro* were reported by Peterson in *History Under the Sea*, (1973).

THE COLLECTIONS

After being salvaged in the 1950's, a great majority of the artifacts from the *San Pedro* find were sold to the Bermuda government with a sample collection given to the Smithsonian Institution in Washington, D.C.. The Smithsonian collections were relegated to "deep storage" and for the most part were unavailable for study. When the Bermuda Maritime Museum was founded the entire "Tucker Treasure", including artifacts from several other of the wrecks worked under permits to the Bermuda government, was moved from the Aquarium/Museum to their current location at the Conservation Laboratory at the Bermuda Maritime Museum's Institute of Maritime History and Archaeology. The finds are available for further study. The ceramics contained in this report were recorded over several periods from 1985 to 1987.

THE SAN ANTONIO (1621)

THE WRECK

After colonisation in 1609 by the English survivors of the wreck of the *Sea Venture*, Bermuda thrived on a fairly constant income provided by salvaged shipwreck material. The renegade Englishmen took every opportunity to profit from the constant flow of ill-fated ship traffic, and kept detailed records (although probably not entirely accurate) of the business of the colony including the salvage of shipwrecks. These Colonial Accounts which were compiled (Lefroy, 1981) have proved a valuable resource to Bermuda historians and provide a detailed picture of the plight of some of the hundreds of survivors of wrecks.

Duly recorded in the accounts is the story of the Spanish ship *San Antonio* which was wrecked on the western reefs in September 1621. The following is an excerpt from the Colonial Accounts (Lefroy, 1981):

"The very next daies night after the arrival of the Magazin ship, newes was brought the Governor by a dismaied Messenger from Sands his Tribe, that one hundred Spaniards were landed in that part, and diuers ships discovered at Sea whereupon he presently manned the Forts, and instantly made thitherward in person with twentie men, determining as he found cause to draw together more strength by the way. Being got thither by the break of day, instead of an enemy which he expected he met onely with a company of poor distressed Portugals and Spaniards, who in their passage from Carthagena in the West Indies, in consort with the Spanish fleet of Plait, by the same storme, that had endangered the Magazin ship, lost theirs upon those terrible Rocks, being to the number of Seventy persons, were strangely preserved; and the manner was thus, About Sunne-set their ship beating amongst the Rocks, some twenty of the Sailers got into the Boat with what treasure they could, leauing the Captaine, the Master, and all the rest to the mercy of the Sea. But a Boy not past foureene yeeres of age that leaped after to haue got into the boat, missing that hope, it pleased God he got upon a chest adrift by him, whereon they report he continued two daies, and was driuen neere to the cleane contrary part of the Ile, where he was taken up neere dead, yet well recovered. All this night the ship sticking fast, the poor distressed in her the next day spying land, made a raft, and were those gaue the alarum first ashore about three of the Clock in the afternoon, - The morning after about seven of the Clock came in the Boat to a place called Mangrove Bay; and the same day their Carpenter was driven ashore vpon a planke neere Hog-Bay.

There was a Gentlewoman that had stood wet up to the middle upon the raft from the ship to the shore being big with childe; and although this was upon the thirteenth of September, she took no hurt,

and was safely delivered of a Boy within three daies after. The best comfort could be giuen them in those extremities they had, although some of the baser sort had beene rifling some of them before the Governors arrival: Also the Spanish Captaine and the Chiefe with him, much complained of the treachery of his men to leave him in that manner, yet had conveyed with them the most of the money they could come by, which he easily missed; whereupon hee suddenly caused all them he accused, to be searched, and recouered to the value of one hundred and forty pounds sturling, which he delivered into the Captaines hands, to be imploied in a general purse towrds their general charge: during their stay in the Iles, some of the better sort, nine or ten weekes dieted at his owne table, the rest were billited amongst the Inhabitants at four Shillings the weeke, till they found shipping for their passage, for which they paid no more then the English paid themselves; and for the passage of diuers of them the Governor was glad to stand bound to the Master; some others that were not able to procure such friendship, were so constrained to stay in the Iles, till by their labours they had got so much as would transport them: and thus they were preserued, releevd, and delivered."

The *San Antonio*, captained by Don Fernando de Vera was a vessel of 300 tons (Peterson, 1975: 284 - 287). The *San Antonio* is not listed as officially being part of the *armada* and *flota* which left Havana in 1621 (Chaunu and Chaunu, 1956: V; 18 - 23) although she may have sailed in consort with them as the Colonial Accounts reported. Her cargo consisted of 5,000 hides, 1,200 quintals of brazilwood, 6,000 pounds of indigo, 30,000 pounds of tobacco, 5,000 pounds of sarsaparilla, and gold and silver worth £5,000 sterling (Marx, 1983: 302). Immediately following the wreck, the governor of Bermuda, George Butler, began to salvage the *San Antonio*. The majority of the cargo was recovered by the islanders, including the personal possessions of the surviving crew and passengers.

The complaints to the Bermuda governor from the surviving Spaniards upon their return to England remind us of the maltreatment often suffered by marooned seaman in foreign occupied and semi-hostile lands. Many of the Spaniards complained of unfair treatment and exorbitant fees charged by the Bermudians. Contrary to the foreign policy during the reign of England's Queen Elizabeth and the aggressive privateering of Drake and Hawkins upon Spanish traders, the reign of James I saw a policy of non aggression toward Spanish possessions in the New World and the Crown would not have condoned mistreatment of Spanish castaways (Peterson, 1975: 289). From all sources, however,

it appears that Governor Butler was intent upon a full and profitable salvage of the *San Antonio*. The resulting complaints and accusations may have spurred the Governor's hasty departure from Bermuda shortly before his predecessor arrived, although he later was appointed Governor of Providence Island in 1638 (ibid.: 290).

In the 1960's, carrying on the islands tradition of shipwreck salvage, Edward B. "Teddy" Tucker discovered one unsalvaged cannon, and in conjunction with Mendel Peterson of the Smithsonian Institution, the site was excavated. The finds from the *San Antonio* included "hundreds of examples of baubles and utensils used in everyday shipboard life - pottery, china, silverware, shoe soles, buckles, buttons, pewter plates and porringers - along with swords, daggers, guns and ammunition... ..stores filled with water - soaked gunpowder, wicker baskets packed with twisted tobacco leaves, and balls of claylike indigo dye which was still useable when brought to the surface" (Tucker, Saturday Evening Post, undated excerpt).

REFERENCES

The *San Antonio* story has been recounted in Peterson's *History Under the Sea* (1973) in addition to *A History of Seafaring* edited by Bass (1972), *The Funnel of Gold* (Peterson, 1975), and *Shipwrecks in the Americas* by Marx (1983).

THE COLLECTIONS

A representative collection of finds from the *San Antonio* was sold to the Bermuda government with a sample collection given to the Smithsonian Institution in Washington, D.C.. The Smithsonian collections were relegated to "deep storage" and for the most

part were unavailable for study. When the Bermuda Maritime Museum was founded the entire "Tucker Treasure", including artifacts from several other of the wrecks worked under permits from the Bermuda government, was moved from the Aquarium/Museum to their current location at the Conservation Laboratory at the Bermuda Maritime Museum's Institute of Maritime History and Archaeology. The finds are available for further study. The ceramics contained in this report were recorded over several periods from 1985 to 1987.

THE ATOCHA (1622)

THE WRECK

The *Nuestra Señora de Atocha* was built in Havana, Cuba and completed in 1620 for the purpose of trade between Spain and the New World. Built to specifications by the Crown she was to be one of Spain's finest armed cargo vessels. Her first voyage was, as her short history proved to be, quite ill-fated. Outfitted with a skeleton crew and only the necessary provisions she left her home port of Havana (Lyon, 1986 pers. comm.). Returning there after losing her mainmast she was repaired for the trip to Spain. At Seville she loaded supplies for the Indies, to which she returned.

After taking on treasure from the mines of South America at the mainland port of Portobello, she continued on the next leg for Havana where she joined the rest of the *armada*. Shortly after the convoy left Havana in September, 1622 the galleons *Margarita* and *Nuestra Señora de Atocha* encountered a hurricane off the Marquesa Keys approximately 40 miles from Key West, Florida. They sank within sight of each other.

There are many documentary accounts as to the location of the two wrecks, and salvage on them began almost immediately. Within a short time of the initial tragedy, a second hurricane aborted the salvage attempts on the two wrecks and wiped out all traces of the *Atocha*. The Spaniards returned to salvage the *Santa Margarita* for several years, recovering much of the treasure, but the *Atocha* was never relocated.



Fig. 3.2. The route of the *Atocha* wrecked 1622.

In the 20th century, another salvage crew attempted to relocate the *Atocha*. For 16 years Mel Fisher's Treasure Salvors, Inc. searched the Florida Keys for her remains. Guided by the documentary research of Eugene Lyon in the *Archives of the Indies* in Seville, Mr. Fisher eventually moved his operation to Key West, Florida to continue his search for the "Mother Lode" of the *Atocha*. In the 1970's some wreckage was identified as belonging to the ship, but the "main pile" as it was to be called, was still elusive.

Subsequently, after years of continued searching, a trail of wreck material was identified. In July 1985, the main deposit was finally discovered in 55 feet of water, nearly seven nautical miles from the location of the first group of finds. It consisted of a portion of the lower hull, silver bars, chests of coins, and thousands of artifacts. This treasure discovery included several thousand pottery sherds, whole vessels, and larger pieces of ceramics.

As work continued into 1986, a wreckage trail started to emerge almost due south from the main deposit, tracing the route back to the place of initial impact and disaster. Artifactual evidence supports the theory that the stern castle was wrenched from the hull of the *Atocha* in the second hurricane while a large portion of the ship was dragged along the seabed to the location of the original finds (Mathewson, 1983). The 1986 trail revealed an enormous quantity of ceramic material with a much broader variety of types than that associated with the lower hull section.

REFERENCES

Several books have been published focusing on the treasure aspects of the *Atocha* find of which the most recent is *Treasure of the Atocha* by Mathewson (1986). The most valuable from a historical perspective is *The Search for the Atocha* by Lyon (1979).

THE COLLECTIONS

The *Atocha* collection was originally made available to me by R. Duncan Mathewson, chief archaeologist for Treasure Salvors, Inc., in October 1985 while I was doing graduate field research. Resource Analysts, Inc., based in Bloomington, Indiana and headed by Dr. John Dorwin, had already been contracted to provide field and laboratory assistance with the recovery of the main wreck deposit in August of 1985 as required by law under Treasure Salvors' work permit.

Although salvage of the *Atocha* and her sister ship the *Santa Margarita* had been in progress for several years, and a great deal of pottery recovered, this report covers only the ceramics recovered from the main cultural deposit identified as the lower hull portion, and ceramic material recovered from the trail of wreckage to the south. Because of the passage of time, and lack of first hand archaeological control, reliability of provenience has come into question for some of the earlier recoveries. Any material recovered prior to my first-hand association with the recovery of material is not included in this paper.

The preliminary finds from the lower hull section during the 1985 season consisted primarily of hundreds of *botija* sherds and only one intact *botija perulera*. Upon my

arrival, the pottery had been stored in buckets, mesh bags, and large fibreglass bins.

The first few months after discovery had been quite a shock to Treasure Salvors and there was a general sense of chaos in the conservation lab as how best to handle the huge quantity of material. Treasure Salvors' conservator Jim Sinclair was a trained archaeologist and self taught conservator who, in the past, had only to worry about the occasional scatter of finds over prolonged periods. Somehow he managed to conserve in bulk the large quantities of precious material, with minimal destruction, in preparation for the division of "treasure" to the investors.

At first the divers were not anxious to recover ceramics. In the past, this had been part of their division of treasure. Fortunately the pottery finds had been omitted from the division to investors because there was enough booty to go around for everyone that year. In the lab at the time of my arrival, there were bins of unmarked pottery sherds, although some were tagged, whose disposition was unclear. Word was then spread that all pottery was to be collected and it would not be part of the division. When the divers realised that something was actually being done with it after they bothered to bring it up, huge quantities began to appear.

When divers saw that it was possible to reconstruct entire vessels from sherds the willingness to help increased. There was very little site provenience on the pottery sherds so the task of reconstruction was virtually impossible.

When the ceramics began to roll in, in huge quantities, they were rinsed and bathed

in fresh water, then air-dried on the floor of the lab. Because very few had site coordinates the decision was made to sort the collection of olive jar sherds according to characteristic attributes, primarily separation of rims, necks with shoulders, basal pieces, and body sherds. This process resulted in the reconstruction of one *olive jar-type botija*. All sherds from the previous excavation on the lower hull section were inspected for markings or irregularities. The sorting process also revealed a greater variety of other ceramics than expected, including pieces of *majolica*, *Columbia Plain*, and some lead glazed wares.

As the 1986 season progressed the flow of ceramic material greatly increased, and a backlog developed of pottery needing rinsing and sorting. There was also a continuous problem of finding suitable storage containers. Plastic artifact bins were in high demand and there were never enough to accommodate the needs of the boats or the lab. The same process used in 1985 for sorting was used in 1986, although the lab floor had been taken over by photographic stations and artifact shelves.

As the southern trail towards the reef began to emerge a greater variety of ceramic material was encountered. Plastic artifact bins were fitted with PVC spickets to allow for easy rinsing and separate storage of the different ceramic types. Glazed wares that had oxidised due to immersion in seawater were soaked in a 3% hydrogen peroxide solution then rinsed in fresh water before air drying. Curtis White, carpenter and underwater systems designer, built a large table that served as a recording station where the intact and partially intact pieces were recorded and several sand boxes were appropriated for reconstruction.

Without doubt the finds from the *Atocha* represent the most complete collection of securely dated ceramics recovered from an early 17th century context. If the wreck had been excavated by a team of archaeologists it would have been a find not far surpassed by the recovery of Henry VIII's flagship the *Mary Rose*. With the help and urging of some Treasure Salvors personnel, Mel Fisher agreed to donate the majority of the pottery to the Florida State museum. A sampling of the finds are currently on display at the Treasure Salvors Museum in Key West, Florida. To my knowledge the complete pottery finds are still available for study at the Treasure Salvors' conservation lab.

THE CONCEPCION (1641)

THE WRECK

The early 17th century was a time of great losses for the Spanish crown. In addition to those sustained in the Florida keys and the Bermudas, the islands of the Indies also took their share of casualties. The *Concepción* was a vessel of 650 tons with a 40 foot beam and a length of 140 feet (Grissim, 1980: 25). Built in Havana in the 1620's like the *Atocha* she carried 36 bronze guns (ibid.). The *Concepción*, owned and captained by Eugenio Delgado, had made many Atlantic crossings and was designated *Capitana* of the fleet headed for Mexico (ibid.: 26). In Veracruz while loading shipments of crown silver, porcelain, silks and other items of value from the New World, she was re-designated the *Almiranta* before departing for Havana (ibid.).

After leaving Havana on September 13, 1641 the trials and tribulations began. The first night she sprang a big leak and had to return to Havana to unload a great deal of cargo to expose the leak for repair (ibid. 27). Twenty four hours after leaving port on September 20 she was struck by a hurricane and a new series of leaks began to flood the ship (ibid.: 28). After jettisoning cargo and pumping for life a decision was made to head for San Juan, Puerto Rico (ibid. 29).

On October 30, the galleon smashed into a coral reef on the north coast of Hispaniola (modern day Dominican Republic) where she rode out the night at anchor (ibid.30). After jettisoning more cargo and artillery it was still hoped that the ship could be saved. On the third night the ship was struck by yet another storm and was wrecked. Only a few escaped in longboats and rafts, and of the 500 passengers and crew only 190 survived (ibid. 34).

Attempts by the Spaniards to recover the lost treasure never amounted to much, but in 1687 an American named William Phips backed by British investors led an expedition which located the wreck (ibid.: 52). Its success propelled Phips into stardom and the backers and the crown profited immensely from the discovery. A return trip to the wrecksite proved what is so often the case today: when the salvors left the site, the wreck was set upon by dozens of vultures from ports all across the Indies (ibid.: 59). There was little left to salvage.

Almost three hundred years later, in the late 1970's, the *Concepción* was rediscovered by an American named Burt Webber. His systematic search finally paid off during his second expedition and the team managed to recover hundreds of artifacts left by the

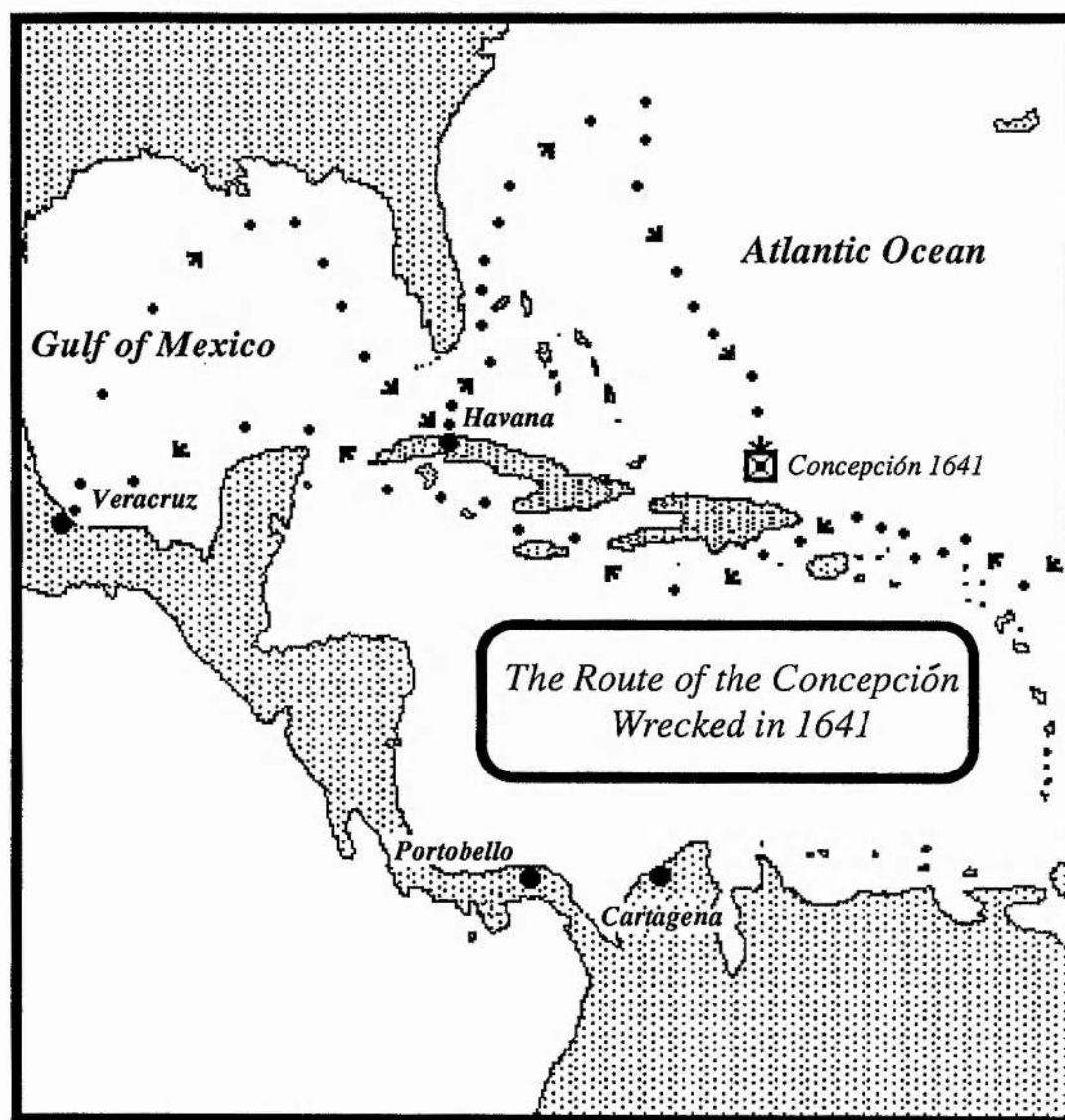


Fig. 3.3. The route of the *Concepción* wrecked 1641.

earlier salvors. Careful mapping of the site and cataloguing of the finds has helped recreate much information about the *Concepción*. Mr. Webber kept meticulous records of his work and is extremely supportive of archaeological concerns. He is highly respected by government officials in the Dominican Republic, and his introductions opened many doors for me.

REFERENCES

For the history and discovery of the *Concepción* the main accounts are *The Lost Treasure of the Concepción* by Grissim (1980) and *Historia y rescate de galeon Nuestra Señora de la Concepción* by Borrell (1983). Reference to the pottery finds can be found in *Artifacts of the Spanish Colonies of Florida and the Caribbean, 1500 - 1800* by Deagan (1987).

THE COLLECTIONS

Many of the *Concepción* finds are on display at the Museo de las Casas Reales, Santo Domingo, Dominican Republic. Arrangements can be made with museum officials for supervised recording. The museum's shipwreck repository, located in a separate building a few blocks from the exhibit, contains additional ceramic finds from the wreck. Señor Pédro Borrell of the Comision de Rescate Arqueologica Submarino allowed me to record the collection in November of 1986. Further study of the finds is encouraged.

OTHER 17TH CENTURY WRECKS

Included in the section on *olive jar-type botijas* is reference to the *Santa Ana Maria* wrecked off County Cork, Ireland in 1627. The reference and illustrations were provided by Colin Martin of the University of St. Andrews, Scotland (letter on file, 1990).

Also included in the section on *olive jar-type botijas* is a wreck discovered off the island of Barbuda, purported to be of Spanish origin and dated to 1695. The provenience

and date of the wreck rely on a written account of a Spanish wreck off the island in 1695 (on file) which coincides closely with the location of the artifact assemblage recovered. Other items thought to date to the latter part of the 17th century were recovered although no structural remains were found. The speculated origin of these finds recorded should be viewed with caution.

Reported finds from the 1697 Portuguese wreck of the *Santo António de Tanná* at Mombasa (Sassoon, 1981) have been included as comparative material. The ceramics used for comparison come from excavations in 1970, and from 1977 - 1980 (ibid.). Other references for the wreck include publications by Kirkman (1972) and Piercy (1977, 1978, 1979, 1981).

THE 1715 PLATE FLEET

THE WRECKS

On July 24 1715 a group of 11 Spanish ships from the *flota* of General Juan Esteban de Ubilla and from the *galeones* fleet commanded by General Don Antonio de Echeverz y Zubiza in concert with a French warship, the *Grifón*, left Havana and headed for Spain (Burgess and Clausen, 1976: 1). By July 31 1715 the fleet found itself in the midst of a hurricane which ran the ships aground on the treacherous Florida coast (ibid. 41). The French ship *Grifón* survived reaching Europe unscathed (ibid.: 41). The following day found the beaches were littered with bodies and wreckage spanning an area between modern Cape Canaveral to south of Fort Pierce on the east coast of Florida (ibid.: 43). Some survivors were sent for help in longboats to the nearby outpost of St. Augustine to the north, while others attempted to reach Havana. Not until September 10 1715 was the

majority of the 1400 survivors rescued by vessels from Havana (*ibid.*: 61).

Salvage efforts began immediately, and although dogged by pirates, the Spaniards managed to recover about 80% of the treasure during their first salvage effort which lasted from September 1715 to the middle of April 1716 (*ibid.*: 69). The king's treasure was returned to Havana where it was loaded onto two ships which finally delivered it to Spain in August 1716 (*ibid.*: 70). Soon after the Spanish packed up camp privateers and treasure seekers swarmed upon the sites. An initial attempt by the Spanish to reclaim the wrecks in 1718 was unsuccessful and prompted a well-planned return resulting in repossessing the sites in September 1718 (*ibid.*: 71). The second Spanish salvage effort lasted until 1719 (*ibid.*: 72).

In 1941 the salvage camp was discovered by Charles D. Higgs although he did not realise that it was the remains of the 1715 shore based efforts. In 1946 Hale G. Smith, in concert with Higgs, excavated the site and concluded that it was the location of the salvage camp adjacent to the 1715 disaster (*ibid.*: 77 - 81). The prospects of finding treasure again surfaced in the late 1950's when Kip Wagner formed a group which began working the wrecks in 1960 (*ibid.*: 82 - 96). In 1961 Dr. William Sears from the Florida State Museum and Dr. John M. Goggin from the University of Florida were assigned by the state to oversee the state's percentage of the finds. In 1964, after problems began to arise in the company's dealings with the state Carl Clausen was appointed to oversee the operation as a full time on site supervisor (*ibid.*: 118 - 119).

In 1965 after a change of governors stronger state controls were implemented and the

state Antiquities Commission was created with a staff of ten to oversee salvage efforts (ibid.: 129). As treasure hunting became more popular, the realities of court battles, forgeries and the hard fact that treasure hunting is not a good business resulted in the eventual bankruptcy of the Real Eight Company in 1973 (ibid.: 143.). Since that time the sites have been salvaged under contract to the state and the subject of archaeological investigations conducted by the Florida Division of Archives, History and Records Management in Tallahassee Florida (Deagan, 1987 : 17).

REFERENCES

References to the ceramics can be found in *Artifacts of the Spanish Colonies of Florida and the Caribbean, 1500 - 1800* by Deagan (1987). The story of the disaster, early and modern salvage, and preliminary archaeological research can be found in *Florida's Golden Galleons: The Search for the 1715 Spanish Treasure Fleet* written by Burgess and Clausen (1976).

THE COLLECTIONS

A large collection of artifacts from the fleet are housed at the Florida Division of Archives, History and Records Management, Tallahassee Florida (Deagan, 1987: 17). The above reports were used for this study in addition to pottery from the fleet shown to me by private salvage firms.

THE TOLOSÁ AND GUADALUPE (1724)**THE WRECKS**

By the early 18th century the profits from the New World colonisation and trade had fed the Spanish economy for over two hundred years. Spain's monopoly on export goods to the New World colonies, however, was far less prosperous and secure than it had been during its first century of colonisation.

In July 1724 the *Conde de Tolosá* (*Tolosá*) and the *Nuestra Señora de Guadalupe* (*Guadalupe*) departed from Cadiz en route to Veracruz via Havana loaded with over 1200 passengers and 400 tons of royal mercury. The mercury, used in the refining of gold and silver, would be enough to supply the mines for a year (Peterson, 1979: 852). Just over a month after leaving Spain, having reached the West Indies, the two ships anchored off Aguada, Puerto Rico, where they took on provisions (James, 1985: 1, after Borrell, 1980). On their way west towards Havana, sailing along Hispaniola's north coast, the two ships were struck by a hurricane on the night of August 24 1724.

Both ships were driven into Samana Bay, on the north east coast of today's Dominican Republic. The *Guadalupe* managed to pin herself to a sandbar and weather the storm for two days. Of the 650 passengers, 550 reached the shore to begin their march along the coast to Santo Domingo, 200 miles to the south (Peterson, 1979: 852). Separated from the *Guadalupe*, the *Tolosá* stayed at anchor at the mouth of the bay attempting to ride out the storm, but at dawn the next day her lines severed and she broke up on the reef with less than forty of the 600 on board surviving (Peterson, 1979: 853).

In the mid 1970's, Caribe Salvage S.A. gained approval from the Dominican government to search for the two ships in the hope of salvaging the vast amounts of mercury believed to be lying on the seabed. In order to impose supervision of the salvage, the Dominican government created the Commission for Underwater Archaeological Recovery now headed by Pédro Borrell. In 1976 Tracy Bowden, director of salvage operations, located the remains of the *Guadalupe*. Attempts to retrieve the mercury, however, proved difficult. As reported to Mendel Peterson (ibid.) Mr. Bowden found that the entire second deck was encapsulated in a thick iron encrustation caused by the concretion of a cargo of fittings for the manufacture of vessels in the New World. The reason for such a cargo, Mr. Bowden reported, was because of the scarcity of trees in Spain due to its centuries of shipbuilding. A deforestation problem has also been argued as a reason for Spain's increasing dependence on ceramics for storage containers because wood for barrels was likewise in short supply (Fairbanks, 1973: 143).

The areas of the *Guadalupe* wreckage that could be penetrated, however, did produce a large assortment of artifacts. In 1977 the remains of the *Tolosá* were identified and work produced a wide assortment of artifacts, many of which are now on display at the Museo de las Casas Rales in Santo Domingo, Republica Dominica.

REFERENCES

The *olive jar-type botijas* from the wreck were initially recorded in a report by James (1988) entitled *A Reassessment of the Chronological and Typological Framework of the Spanish Olive Jar* which deals exclusively with the *botija* material and provides valuable

quantitative information on the collection. The finds have also been included in *Artifacts of the Spanish Colonies of Florida and the Caribbean, 1500 - 1800* by Deagan (1987). The story of the wreck is chronicled by Peterson (1979) and Borrell (1980).

THE COLLECTIONS

The pottery finds from the two ships, including over 600 intact *botijas* (James, 1988), represent the largest collection of intact ceramics ever to be recovered in the Americas. In November 1986, through Señor Pédro Borrell, I was permitted to undertake a brief study of the ceramic assemblage recovered from the two wrecks now housed in the buildings of the Museo de las Casas Reales in Santo Domingo.

Upon my arrival, Señor Borrell assigned Francis Tejeda, Dargelos Castillo, and Mario Barinas to assist my study. Due to a change in the Presidency of the country many governmental changes were occurring and the new museum director had not yet taken office. In spite of uncertainty as to who might authorise entry to different parts of the museum these three gentlemen kindly managed to accommodate almost every request. On three different occasions I was permitted, under guard, to enter the museum while it was closed to the public.

The ceramics from the various excavated wrecks are housed in three main repositories, in three separate buildings. The part of the museum open for public display contains a large permanent display containing artifacts recovered from the *Tolosá* and the *Guadalupe*. The majority of the larger *olive jar-type botijas* (*botijas peruleras*) are

displayed on shelves in this part of the museum. The majority of the intact *majolica* and glazed ware collections are also displayed behind glass in this exhibit. Two large *tinajas* are also part of a display although they are not kept behind glass.

A building one block away from the main building houses the ceramic department which contains samples from all the museum collections. The third building housing shipwreck material serves as the main shipwreck repository and conservation lab. Here the large assemblage of $1/2$ *arroba botijas* are kept along with the hundreds of other intact vessels and ceramic sherds undergoing conservation and reconstruction.

The shipwreck repository and conservation lab served as my general headquarters and a table was cleared where I was permitted to set up recording equipment. Because of the limits of time, it was decided that a representative selection of wares from the two wrecks would be recorded and used as a comparative sampling of the large number of examples available. Unique wares were individually recorded while a random representative sample was chosen from each of the wares that had similar characteristics. This collection undoubtably merits fuller study. The country encourages outside involvement, for although rich in human and historical resources, it lacks trained researchers and the financing necessary to carry out such a study.

Because all shipwreck material is housed and treated in the same facility, the chance of confused provenience is an inherent risk associated with study of the collections. The *Tolosá* and *Guadalupe botijas* are all shelved together, along with some completely unassociated materials which can easily be differentiated. For the most part, the *botijas*

are not numbered and differentiation between *Tolosá* and *Guadalupe* examples is not possible. Because the two ships were provisioned, sailed, and lost together, the two collections may be regarded as one assemblage for the purposes of this study.

Identification of the remainder of the pieces studied was usually facilitated by a catalogue number inked on the ceramic piece. The code consisted of a shipwreck code followed by the artifact number. The codes were as follows: *Tolosá* "# 3S" followed by the artifact number, *Guadalupe* "# 1M" followed by the artifact number, *Concepción* "#4P" followed by the artifact number. In a few cases, numbers were missing. If there was any doubt as to the origin of an item my three associates were asked and in most cases identification was unanimous. Any items identified this way will be addressed as such. Pieces in the museum displays were not generally marked, and removal from the cases was not possible. Francis Tejeda served as a diving liaison officer for the government for several years and was my primary identification resource for these pieces.

THE 1733 PLATE FLEET

THE WRECKS

The first half of the 18th century was catastrophic in terms of shipwreck losses for the Spanish Crown. Shortly after the disastrous events of 1715 and 1724 on July 13 1733 the Spanish fleet of 23 ships left Havana for Spain only to be grounded by a hurricane two days later (Logan, 1977: 2; Skowronek, 1984: 22). It has been speculated that only four of the vessels were Spanish-built with the remainder from the New World colonies or of Dutch, Genoese, German, New England and English origin (Skowronek, 1984: 22 from Peterson, 1975: 385). The wrecks were scattered over an eighty mile stretch of coast from

Key Vaca to upper Key Largo (ibid.). The Spanish salvaged the sites with the exception of the *San José y Las Animas* and eventually recovered more than the officially listed treasure (ibid.).

The remains of the fleet were discovered by modern treasure hunters in the 1940's (Skowronek, 1984: 25 after Meylach, 1971: 46 and Peterson, 1972b: 263). Some of the vessels were later surveyed by the Florida State Underwater Archaeological Research Section of the Bureau of Historic Sites and Properties (ibid. referring to Smith and Dunbar, 1977) with seven sites under salvage contracts with state supervision (ibid.). In 1968 the remains of the *San José* was discovered by treasure hunters who began working the site (ibid.: 4). Over the next several years archaeologists had to watch as the site was excavated using a blower (ibid.: 5 - 6) which destroyed intra-site provenances. The salvors were required to recover ceramics although many were left on the site due to the "lack of commercial resale value" (ibid.).

REFERENCES

The main reference to the ceramics is a thesis by Logan (1977). The majority of the assemblage from the fleet was recorded by Skowronek (1984). Other references include Deagan (1987), Marx (1983), and Peterson (1975).

THE COLLECTIONS

The collections are housed at the Florida Division of Archives, History and Records Management, Tallahassee Florida. The above reports were used for comparative study.

EL NUEVO CONSTANTE (1768)

THE WRECK

In September 1766 the *El Nueva Constante* was grounded by a hurricane on the coast of present day Louisiana, USA. She was part of the New Spain Fleet which originated in Veracruz and sailed for Spain after stopping at Havana (Pearson, 1981: 1). It was the return part of a voyage which had originated at Cadiz in December 1765 (ibid.: 3). For the voyage to the Indies her principal cargo was 1,334 boxes of mercury and wine, liquor, iron, nails, plow points, vinegar, and "a box of relics from the holy places in Jerusalem" (ibid. 3). Originally an English ship, she had been purchased by a Cadiz merchant family and outfitted there (ibid.).

Trade was stagnating in the middle part of the 18th century and this was reflected in the declining number of voyages. The fleet that sailed to Veracruz in 1765 was only the third to sail since 1739 (ibid.: after Walker, 1979: 229). After discharging cargo in Veracruz the *Constante* was loaded with 74,620 pesos worth of specie including 30,680 pesos in silver coin, 5,000 pesos in gold coin, and over 160 pounds of silver bars (ibid.: 5 from Ferrar, 1766b; Idiaquez, 1766). After several delays in port and orders to wait for *El Dragon* which was to be the *almiranta*, much of the specie was transferred from the *Constante* and replaced with export goods including cowhides, medicinals, dye wood, cochineal, gold, and silver (ibid.: 6). After a succession of devastating storms of hurricane force the *Constante* sprang severe leaks and the crew was forced to run her aground on the coast of Louisiana (ibid.: 6 - 7). After the seas settled the captain sent a boat to the port of Balize at the mouth of the Mississippi river and began to transfer the cargo ashore (ibid.). The Spanish governor of Louisiana began a rescue and salvage of the passengers

and cargo soon after.

In 1979 several copper ingots were caught in a shrimper's net which prompted research into the site and an initial modern salvage attempt which included the use of a dredge bucket (ibid.: 12). Recognising the historical importance of the wreck the salvors notified state authorities who began archaeological investigations which ended in February 1981 (ibid. 15).

REFERENCES

The main reference is a report by Pearson (1981). A larger publication is currently in progress also by Pearson.

THE COLLECTIONS

The collections are housed at the Old State Capital building in Baton Rouge, Louisiana in the care of the Department of Cultural Resources. A short visit was undertaken in 1989.

THE *ELIZABETH* (1839)

Later than the primary focus of this thesis is the wreck of the *Elizabeth* (1839) off Western Australia. The wreck is included because it contained at least three complete *olive jars* and a number of sherds (Henderson, 1973: 20). The one reference cited is Henderson (1973).

ILLUSTRATIONS AND RECORDING

As many of the ceramic collections from the above wrecks as possible were visited during five years of field research for this project. It was felt that in order fully to understand the variances which comprise changes in form or manufacture of certain common types it was necessary personally to record examples of each category of ware in question. Some of the collections were recorded at leisure, while others had to be examined under tight time and/or financial restraints.

I cannot overstress how important it has been to record at first hand all finds from these tightly dated wrecks. Full scale illustrations allow the archaeologist truly to get a feel for the individual pieces and specifically to define forms. Many of the changes of form that have been overlooked in previous work may stem from uncritical recording techniques, especially excessive reliance on photography. In some cases, however, it is understood that the archaeologist is limited by time or physical restraints which may inhibit full recording.

Examples in this text were recorded by placing the vessels on a drawing board and blocking them up with plasticene, placing the centre vertical plane of the vessel on a horizontal parallel plane to the drawing surface. Profiles were obtained by placing a perpendicular edge to the outermost surface of the vessel and marking the profile on the drawing surface. Sections were determined using measurements and moulded plasticene. Thicknesses of interior walls, such as the insides of jars, have been omitted unless holes or fractures reveal wall thickness.

The drawings were then inked and reduced. Artistic interpretations have been left to a minimum as surface textures or glaze patterns may erroneously be suggested by subjective artistic or shading styles. The scales adopted are 1/2 size for the smaller pieces and rim profiles and 1/4 scale for larger whole vessels such as *olive jar-type botijas*. A few smaller pieces are shown at actual size as are the rim markings. Final inked illustrations were scanned onto computer discs at 300 dpi resolution at exact scale, and the illustrations were placed into the text files on a Apple Macintosh® in Pagemaker® and printed on a laser printer.

In the section on *olive jar-type botijas* the following codes identify the specific volumes with specific wrecks:

SA = 1588 : SPANISH ARMADA OF 1588

HC = 16TH c : COX COLLECTION LATE 16TH CENTURY

SAT = 1620 : *SAN ANTONIO* 1621

NSA = 1622 : *ATOCHA* 1622

NSC = 1640 : *CONCEPCIÓN* 1641

CW = 1715 : CORRIGAN'S WRECK 1715

TG = 1724 : *TOLOSÁ* AND *GUADALUPE* 1724

BM = : BRIAN MALPUS COLLECTION: DATE UNKNOWN

ED = : THE COLLECTION OF EDMUND DOWNING: DATE UNKNOWN

OLIVE JAR-TYPE BOTIJAS

INTRODUCTION

For many years the presence of coarse wheel thrown earthenware sherds has been an important clue in recognising archaeological sites dated to the time of the Spanish colonisation of the Americas. The category of ware is known by various names, but most commonly as the "*olive jar*", as it was first named by Holmes in 1903 (p.129). Referred to here as "*olive jar-type botijas*", it continues to be the most prevalent, yet most

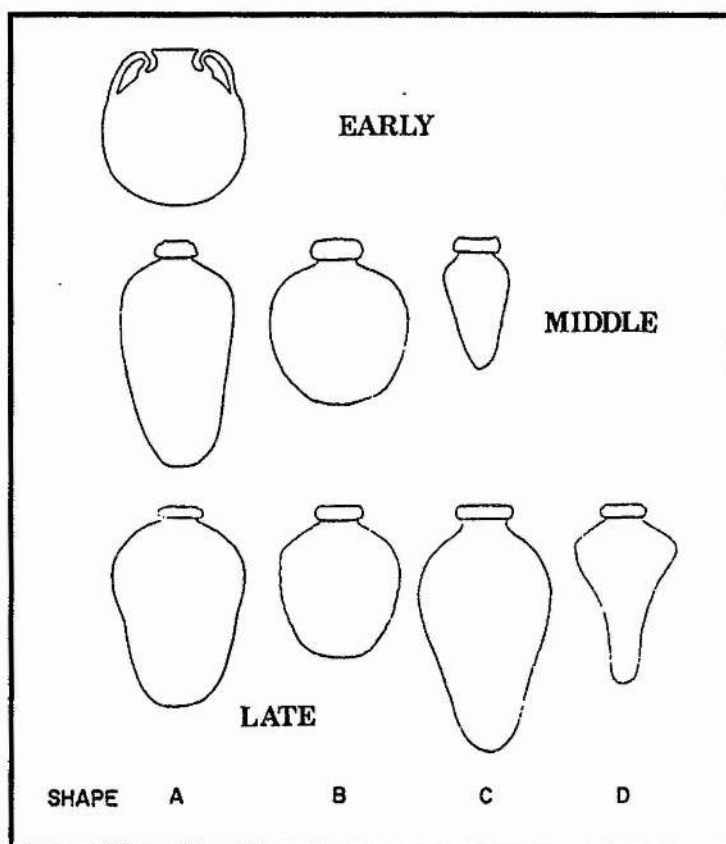


Figure 4.1. Goggin's Olive Jar typology.
After Goggin (1960).

neglected ceramic tradition found in Spanish colonial terrestrial and shipwreck sites in the Americas. The jars served as simple shipping and storage containers for almost anything that would fit inside them. Reasons for the type's lack of study are easily understood once one has become familiar with the characteristics of the ware. Not only is it omnipresent, but physical attributes are seldom distinguishable to most archaeologists. Sherds of the ware and intact specimens have served more as general identifiers of

Spanish colonial occupation rather than specific criteria used to evaluate temporal significance or qualitative information regarding archaeological contexts.

The jars bear an unmistakable similarity to Greek and Roman amphoras common throughout the Mediterranean. Over the centuries, their functions have changed far less

than their forms . A key to survival has always been man's ability to adapt when new environments demand it, and some of that trait is reflected in the development of the jars as well. Sometime in their development, the jars lost their amphora-like handles and took on a basic appearance which was to last for over two centuries. The three basic forms defined by John Goggin (1960) as Middle Style Olive Jar shapes A, B, and C (**Figure 4.1**) beginning some time in the 60 or so years after the discovery of the New World, are still regarded the "basic" shapes of the vessel. His descriptions of the three shapes (Middle and Late Styles Shapes A, B, and C) are as follows:

The larger **Type A** vessel is described as "a large, elongated egg-shaped vessel", and the **Type B** smaller and "next most common" as a "medium-sized, compressed egg-shaped vessel", and the **Type C**, "as a small, pointed egg-shaped vessel" (Goggin, 1960: 12 -13). All of the jars after the Early Style have short necks with a doughnut-like ring mouth. The only easily recognisable differences for the jars is the distinctive form variation of the "Early Style" jars with a different rim and mouth plus the addition of handles, and between two distinct types of paste which separate the Middle and Late styles.

The jars are sometimes covered on the exterior and interior, or just the interior, with a light to emerald green glaze, also reported ranging to brown (Goggin, 1960: 11). The unglazed surfaces are sometimes described as having a whitish slip (ibid. 14; Deagan, 1987: 35; Martin, 1979: 281). The white slip appearance may also reflect years of erosion or sea abrasion, or be a chemical change attributed to the firing process (James, 1988: 51). Further confirmation that the jars were not covered in a white slip but a natural byproduct of the firing process is argued by Barton (in James: ibid.).

Of the two paste types, the most common encountered by this researcher is a soft,

gritty, coarse light to dark brown or pinkish-tan colour with several visible mineral and sand-like inclusions. A few examples exhibit an almost brick red colour. The inner core of the fabric on fresh breaks reveals a light to dark grey paste, with numerous air pockets. The other paste-type is described as from fine to medium in coarseness to almost chalky with temper ranging from medium-coarse sand particles to almost none.

Used primarily as liquid and small victual shipping and storage containers, the jars were so sturdy and omnipresent that they found their way into the homes of colonists in the form of structural supports in roof vaults (Goggin, 1960: 6-7; Deagan, 1987: 32) and for building and supporting entire walls such as in the dining room of the Hotel Presidenté in Oaxaca, Mexico.

The enormous amounts of *olive jar-type botija* material uncovered in the American colonies comes as no surprise. Shortly after Columbus' discovery of the New World in 1492, Spain was faced with the enormous task of setting up a mechanism to extract as many riches from her newly discovered lands as possible. This resulted in a virtual "Gold Rush", controlled by the crown, to the Americas. The reliance on the motherland for the necessities of life to support colonial efforts has been demonstrated in Chapter 2. Most of that reliance was imposed through strict regulation and restriction of the colonists' entrepreneurial freedom.

As in business today, the surest way to reap maximum profits from any enterprise is absolute control and a comprehensive system of monitoring. In consequence the massive profits the Crown derived from importation of wealth from the Americas were supplemented by profits gained through massive exportation of the commodities necessary for the colonies to survive. *Olive jar-type botijas* were a major part of the exportation process.

The task of exporting huge amounts of foodstuffs to the colonies was a formidable endeavour which afforded hundreds of individuals a channel for enterprise that passed from generation to generation. A fundamental consideration was the supply of cheap and durable containers. One of the solutions (*olive jar-type botijas*) must have occurred quite naturally. Why not continue a ceramic tradition, with minor variation, that had (in the minds of the 16th century Spaniards) been in existence forever? When something proved to work, and worked better with only slight modification, why change it entirely? Evidence of this is the form's strong resemblance to the ancient amphora that were once the primary shipping and storage vessels used in the Mediterranean.

The shapes of *olive jar-type botijas* are highly suited for storage and transport over rough waters. Their rounded form maximises structural integrity and their incurvate sides fit nicely against a curving hull. The small opening makes for an easy closure with minimal airspace.

In his *Introductory Study*, Goggin's goal as stated in his discussion was to "set up three ceramic divisions based on temporal differences." (Goggin, 1960: 24 - 26). His temporal groupings fell into three broad time periods which have political and historical parallels with the settling of Spain's American colonies. The Early Style *olive jar* begins to appear about or slightly before 1500, extending to about 1575 - 1580 (ibid. 23). This period parallels the initial century of Spanish exploration in the New World (ibid. 30). The Middle Style ranges from post-1562 and pre-1600 to between 1750 and 1800 (ibid. 24), during a period of nearly two centuries of political and economic stabilisation, spread of religious missions on the frontier and the gradual weakening of the Spanish power towards the end (ibid. 30). The Late Style range is from 1780 to 1850 and later

(ibid.: 24) and corresponds with the breakdown of Spanish power and the rise of the New World republics (ibid. 30). While Goggin admits that the system is a compromise, it was designed to deal with the material at hand (ibid. 25) and now provides a firm foundation, as it was intended, upon which to build a more detailed classification.

Because of the homogeneous quality of the Middle Style paste, it is difficult to classify sherds of this ware, so the hundreds of samples normally found scattered throughout archaeological sites in the Americas are usually classified non-diagnostic and virtually denied any chances of post excavation study. When the subject of the *olive jar* was first approached by this researcher, another point was extremely evident: There was little or no framework within which to integrate the research. There were, however, two notable exceptions. The first was the *Introductory Study* done by John Goggin published in 1960 and mentioned above. The second was the report on *Spanish Armada Pottery* by Colin Martin published in 1979. Other sources included Schafer(1938), Fairbanks(1972), and Langouet(1973).

Both Goggin and Martin stressed the need for further research, but apart from their work little serious study has yet been carried out. Within the past few years, however, the subject has re-emerged, usually as a small part of larger projects covering Spanish colonial material culture and ceramics. At the onset of my research it became apparent that a primary reason for the ware's lack of study was the perceived similarities of the jars and sherds, in addition to its broad temporal ranges originally deduced by Goggin. Why bother with an omnipresent ceramic type if identification only proved to place its temporal origin in a time span which covered the entire range of the period in question? With this in mind, ceramic traditions which evidenced more dramatic transitions through the passage of time became the primary focus of ceramic scholars. Goggin's *Introductory Study* itself, for example, was merely a byproduct of an intensive inves-

tigation of *majolicas* (Goggin, 1968). Such was the fate of the most prevalent Spanish ceramic tradition.

Excavated or salvaged over the last forty years, the finds from shipwrecks discussed in Chapter 2 and dated to the colonial period have provided the collections of *olive jar-type botijas* used for this study. Although body sherds of the type are indeed hard to evaluate, entire sherd assemblages which include a high proportion of intact jars have made it possible to attempt a more complete examination of this ceramic tradition. Previous terrestrial studies have dated material through associations of finds with often overlapping contexts. This process is risky, in that assigning dates to materials based on a previous assumption may simply compound the margin of error. The value of collections from securely dated shipwrecks, with negligible contamination from post-catastrophic depositions, cannot therefore be overstressed.

Shipwrecks have provided large assemblages of all artifact categories and little specific attention has been paid to the enormous quantities of the ceramic material. In addition to a few graduate studies, the published exceptions of securely dated collections are Martin's work on the Spanish Armada of 1588 (1979), and a report and Masters Dissertation on the collections of the *Tolosá* and *Guadalupe* wrecked 1724 by Steve R. James (1985). Although contemporary authors have attempted to include finds from shipwrecks in more comprehensive studies, the input has largely been piecemeal, and derived from secondary sources. It is interesting to note that a good percentage of the qualitative material used by Goggin(1960) was recovered from the wrecks from the 1733 fleet, making him one of the first American archaeologists to evaluate shipwreck material.

The goal of this chapter is to resurrect an important and overlooked ceramic tradition, and to recreate the functioning role the jars played in the everyday lives of those who used them, and how they used them. It is believed that the roles of *olive jar-type botijas* played a much more important part in colonial society than has previously been assumed. Today we take for granted the process by which we consume and store everyday staples and delicacies. Thousands of miles from home in savage and remote outposts or becalmed for weeks at sea, the presence of these ceramic containers meant the difference between luxury and subsistence, or even survival. Concentrating primarily on the *olive jar-type botijas* carried by Spanish ships, actual finds from Spanish shipwrecks are the focus of the chapter.

Dating *olive jar-type botijas* from land sites has proved frustrating to archaeologists with only vague dating criteria at their disposal. To use previously developed typologies which span over a 200 year time period as a date range for the most common types is simply too broad a horizon to be useful when studying a colonial period with a 400-year history. Although the material has been available for some time, a first hand comparison of ceramic collections from several Spanish wrecks covering approximately 40-year intervals throughout the colonial period has never been attempted. The unique temporal qualities of securely dated shipwreck material discussed in Chapter 1 are the basis for this re-examination. It is my hope that the evaluation of the material assemblages from the shipwrecks recorded in this report, with comparisons of other reported shipwreck collections, in addition to a review of historical documentation and current research, will solidify the foundation laid by my predecessors, while providing a framework for further study of this ceramic type.

TERMINOLOGY, ORIGINS, AND CONTENTS

For the last three decades the study of *olive jar-type botijas* has relied on the pioneering work of John M. Goggin (1960). The first issue tackled by Goggin was to coin a name for this everyday Spanish pottery, as he states that "no satisfactory name has yet been used in Latin America for this type..." (ibid. 4) *Botijuela*, *botija*, and *jarra de aceite* had all been suggested but were rejected by Goggin due to confusion which might arise from other associated meanings. Choosing to continue using the name suggested by Holmes in 1903, Goggin decided "... it seems best to use the term *olive jar* as the equivalent to a "type name" with no local ethnographic or linguistic significance." (ibid. 5.) Recent archaeological studies in the Americas and elsewhere have generally accepted this nomenclature.

A modern encyclopedia definition, however, states: "A *botija perulera* is a vara and a half in height (approx 49"); two quarters (one half) that in diameter (approx 24.5") at its widest point, and with the figure of an inverse cone." (courtesy of Gene Lyon, 1986 from the *Enciclopedia universal ilustrada europeo-americana* (E.S.P.A.S.A.) Barcelona, Editorial Espasa-Calpe. Edition of 1958-68 IX,311). This seems to describe our familiar form although Robert and Florence Lister have adopted the current Spanish term of *anfora* which appropriately attributes the form's direct lineage (1987: 131 - 133), while noting that American archaeologists continue to use the term "*olive jar*" (ibid.: 133). Citing documentary evidence from shipping records after the middle of the 16th century (ibid.; Appendix 2), the Listers also state that the "archives almost always refer to *botijas peruleras* of wine, but they also list *botijas peruleras* of vinegar. That seems contradictory because *perulera* translates as *wide-bellied*..." (ibid: 133.). The Listers also point out that the early Roman practice was to ship wine in the more elongated *anfora* and to ship olive oil in the rounder vessels (ibid.).

It was hoped that further archival research would settle the terminology question. I am indebted to Dr. Eugene Lyon for providing me with a valuable starting point. While working on research in connection with the colonial town of St. Augustine, Lyon uncovered documents relating to the acquisition of ceramic containers. He was kind enough to pass on some helpful unpublished notes concerning them. From the Archives of the Indies in Seville the following list of transactions was recorded for 1566:

(AGI: CD 442, No. 2 (DD 298, No.1, fol. 513 ff)

- 43vto. 1,800 *botijas peruleras*, at 13 mrs. the *botija*, from Alonso Rodríguez ollero, of Triana
50. 600 *botijas* of barro, *1/2 arroba* each (for oil). Leonor Martel, wife of Diego de Rossa, ollero, triana. 11 mrs. each.
- 51vto. 2,000 *botijas peruleras de barro , esteradas hasta la boca y empegadas con pez de Avila, para vino de la Jarafe*. 32 mrs. each.
- 55vto. 3,000*botijas peruleras, esteradas y empegadas*, 33 mrs. each. Francisco de Arcos, Ollero, triana.
- 59 500*botijas peruleras, esteradas y empegadas*, 32 mrs. each. Bartolomé Rodríguez. Ollero, triana.
- 70vto. 1,790*botijas of varro of 1/2 arroba* for oil, *enseradas hasta la boca*. 11 mrs. Pedro de la Vega, Ollero, triana.
- 206vto. 200*botijas of 1/2 arroba* for oil, *enseradas* to mouth (Pantecras. Francisco de Arcos, ollero, triana.
- 355vto. 400*botijas de 1/2 arroba, esteradas* to mouth. Goncalo Nuéz, Seville for oil. 12 mrs. each/ were stoppered and "enyesso " after filling.
- fol.257. 250*botijas empegadas y enseradas* to mouth @ 31 mrs. 150 *blancas* for water @ 22 mrs. Francisco de Arcos, Ollero, Triana.

(#1112, 1568: AGI: CD 442, No. 2, as indicated)

- fol. 278vto. 600 *botijas* of *1/2 arroba*, for oil. *enserada* to the mouth, 8 1/2 mrs. Miguel Sanchez, Ollero of Triana.

The preceding transcript is the most informative yet encountered by this researcher. The inclusion of prices for the containers and contents provides a necessary link in associating names with vessels' forms. Other subtle differences between entries offer several clues as to pricing, forms of delivery, contents, and possible abbreviations of terminology. The first entry (43vto.) lists 1800 *botijas peruleras* at 13 maravedis each, with no description of contents. We will assume they are plain and empty. The second entry (50.) lists $1/2$ *arroba botijas* (of clay), used for oil, at the cost of 11 *maravedis* (mrs.) each. This suggests two things. First, the term "*botija* " is qualified by " $1/2$ *arroba*", suggesting a different size or type, and secondly, that $1/2$ *arroba* containers were used for oil. The third entry lists *botijas peruleras* (of clay) "*esteradas hasta la boca y empegadas con pez de Avila, para vino de la Jarafe*": The current translation of *estera* means "mat" or "matting" up to the mouth, and coated with pitch (from *empegar* which translates to "coat with pitch") and filled (?) with wine at 32 mrs. each. One would expect that containers covered, sealed, and filled with wine would sell for more than double the price of empty jars. This also tells us that the *botija peruleras* were used for wine.

The fourth and fifth entries of *botija peruleras* (55vto.), simply state "matted and coated" at near the same price as the previous "full jar" order at 33 mrs. and 32 mrs. each. Again we can assume that they contain wine, given the price is nearly identical to the previous entry.

The eighth entry (355vto.) is more confusing. The order is for $1/2$ *arroba botijas* for oil, matted to the mouth at 12 mrs. each. They were then "stoppered" and possibly "sealed" after filling. Given the previous order of $1/2$ *arroba botijas* at 11 mrs. each, with the difference possibly in the mat covering of the jars, the 12 mrs. price would indicate they were stoppered and sealed after purchase.

The ninth entry refers only to *botijas* coated and *enseradas* to the mouth, which may be another form of matting, although the current translation of *ensartar* (similar to *enserada*) is to "string or thread". These are listed at 31 mrs. which is only 2 mrs. off our *botijas peruleras* wine order. This may suggest that "*botija*" without the qualifying "*1/2 arroba*" may refer to our *botija peruleras*, and the 2 mrs. discount may be due to a different covering, no matting, or different contents. The exception in describing the vessels may be when referring to jars filled with oil, which more often appear in *botijas* of *1/2 arroba size*, although there has not yet been evidence uncovered to enforce any double meaning. The tenth entry, two years later, lists *1/2 arroba botijas*, again for oil, at 8 1/2 mrs., implying that the cost of the plain *1/2 arroba botijas* may have actually come down during the preceding years.

The transcript also solves another question that has puzzled archaeologists and historians: where were the jars produced? Such large quantities of vessels must have been manufactured in several locations in and around the Andalusian province. Documentary evidence uncovered by the Listers suggest the practice of making the jars at the vineyard (Florence Lister: 1986, pers. comm.). Exact centres have yet to be archaeologically pinpointed although the Lyon transcription clearly indicates "Triana", the famed potter's section of Seville, which has been speculated again by the Listers (Lister and Lister, 1986). Lack of large quantities of waste materials at suspected pottery sites may also indicate that a large percentage of imperfect jars entered the system with little regard for aesthetics.

In the 1586 projected costing of the Spanish Armada, the 100,000 pieces of pottery were to be supplied by Seville and Lisbon, with each town providing half (Fernandez Duro, 1884: 283, from Martin, 1979:299). Based on the fact that some pottery types

were common to all wrecks (*olive jars*, *Merida-type*, and *glazed red earthenwares*) and the only geographically common denominator is Lisbon, Martin concludes that the wares must have been loaded at that port (*ibid.*). Because it has been determined that these containers were used for basic ration commodities such as olive oil and vinegar, and the oil and most of the vinegar were to be supplied by the province of Andalusia (Duro, 1884:277, from Martin, 1979: 300) Martin concludes that shiploads of filled jars must have been brought to Lisbon from Seville and Cadiz during the supply build-up prior to sailing (*ibid.*). It is highly probable that the same pottery centres engaged in supplying the vast needs of the trans-Atlantic trade fleets were requisitioned to supply similar, if not identical types of wares for the Armada. This hypothesis is further supported by several close parallels encountered from shipwreck finds in the Americas.

Another transcription made by Lyon yields further information about the uses and contents of the vessels. It was reported that oil was shipped in *botijas* of $1\frac{1}{2}$ *arroba* each and vinegar was distributed in *cuartillo* sizes, while salt was distributed in *arroba* sizes (Lyon, 1986: pers. comm.) From the Accountant's Accounts of 1596 - 1597, Lyon uncovered the following notes:

15 July 1596 - 2 $\frac{1}{2}$ *botijas* of oil used to *embrear* (oil, tar) the carriage wheels of the artillery.

15 $\frac{1}{2}$ *botijas* of oil given to the convent of San Francisco for the lamp which burns before the Holy Sacrament for the 15 months from 1 October 1595 to Dec. 31, 1596. (Lyon, 1986: letter on file from AGI CD 947; mcf. PKY reel 25-G, fo. lvo. et seq.)

It is not certain what type of oil is referred to in the entry of 15 July 1596. One assumes it is not a petroleum derivative. It may have been an animal derived oil, rather than olive oil, as is also possible with the oil described for use in the lamp at the Convent of San Francisco. The specific type of vessel is also unclear.

Further research by Dr. Lyon in the "perusal of the 'Relation of the supplies, artillery..." regarding goods delivered to the Florida forts concerning provisions on board *Los Tres Reyes*, (part of the Pedro Menendez Fleet of 1565) it is reported that again olive oil was shipped in *1/2 arroba botijas*, water in *botija peruleras*, and wine in *botijas peruleras* (Lyon: 1986: personal correspondence from AGI CT 2932; Lyon:1976).

Based on a 1579 shipment list using *botijas* for wine, *botijas medias peruleras* and *botijas peruleras* for olive oil, and *botijuelas* for honey, Martin has questioned whether the terminology of vessel forms and sizes were related to contents, in addition to serving as the pricing units for the various commodities (Martin,1979:284, from Schafer, 1938:317,323). Martin states it is "tempting to suppose that these may have been Goggin's shapes A, B, and C respectively ". Volume and form relationships will be discussed later in detail.

While the Listers have pointed out that documentary evidence after the middle of the 16th century is filled with references to *botijas* and *botija peruleras* (1987: 133), another notable reference refers to our *botijas* in a study of ship registers between 1534 and 1586 (Revello: 1943: 781). It appears that the terminology recurs throughout most of the two centuries after the initial discovery of the New World and beyond. Several other documentary sources reported by authors of the subject seem to support the Spanish use of the terms *botija*, *botija perulera*, *botija media perulera*, *botijas de media arroba*, and *botijuela*.

While it is highly probable that variations of terms developed due to colloquial differences, with changes in economic climates, and plain abbreviated versions, evidence seems to point to a fairly consistent use of the terms. When relating them to

Goggin's typology (1960), the most consistent correlation appears to place *botijas*, and *botijas peruleras* in the Middle and Late Style **Type A** category, with *botijas medias peruleras* and *botijas de medias arrobas* in the Middle and Late **Type B** category.

When comparing the elongated "Goggin Type A" to the stouter and rounder "Goggin Type B", contemporary authors have ruled out terminology that described the more elongated version of the two as *perulera* or *wide-bellied*. It is entirely possible that the description of "wide-bellied" *botijas* (*peruleras*) for wine and vinegar may have simply begun as a way to describe the jars as a much wider, more globular version of the proportionately thinner elongated amphora used to carry the same substances in earlier times. (see Lister and Lister for typical amphora forms, 1987: 9 Fig. 5, a-b). In simple terms, the Spanish names may have been used to compare the vessels to earlier forms rather than to compare co-existing forms used for other substances.

This line of reasoning would then answer the question of redundancy raised by Goggin (1960:4) of using both *botija* and *perulera* in the same type description. *Botijas* would then serve as the more generic term describing the familiar descendent of the amphora, with *botija perulera* describing a modern (in Spanish colonial times), wider and rounder vessel used for shipping and storing wine and other liquids. It would then make some sense to use an apparently redundant term.

Because the research foundations of this vessel type have been built upon Goggin's widely used and accepted term "olive jar" it would be counterproductive to eliminate its use due to its wide acceptance. I would like to suggest, however, that inclusion of the terms "-type *botija*" be incorporated into the type name in recognition of its recurring use throughout Spanish historical accounts. This would bridge the accepted terminology and the actual names as recorded in the archival accounts. The revised type name

would therefore be: "*olive jar-type botijas* " and will be referred to as such throughout the remainder of this text.

The chapter is arranged as follows: Beginning with the finds from the middle 16th century the material is presented as it occurs chronologically. Whole jars are described using Goggin's Middle Style shape classification (Shapes A, B, C) and Late Style Shape D, however the shapes are here referred to as types. For example, a Goggin Middle Style Shape A is called a **Type A** jar, a Late Style Shape B is called a **Type B** jar. As the purpose of this study is to refine dating criteria, Goggin's Early, Middle, and Late classification have not been incorporated, as the secure dates of the jars themselves are used to date the types.

In the course of this study it emerged that rim design can be used as a temporal indicator. As a result, rim types have been defined according to stylistic attributes and will be discussed in detail in the conclusion. As a guide to the reader, the types are presented here in overview, as the type names are used in the discussion of jars throughout the text. The rims have been grouped into five basic types:

Type 1: Stricly after Goggin's Early Style, examples are rare and may be confused with rims from a later period. The shape is described as a flaring high collared mouth with no apreciable thickening, standing fairly high from the body and lacking the doughnut-like shape (**Fig. 4.2.** after Goggin, 1960: 10).

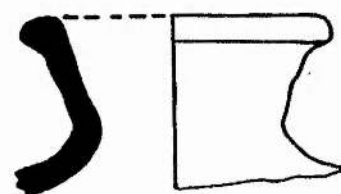
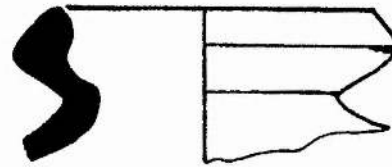


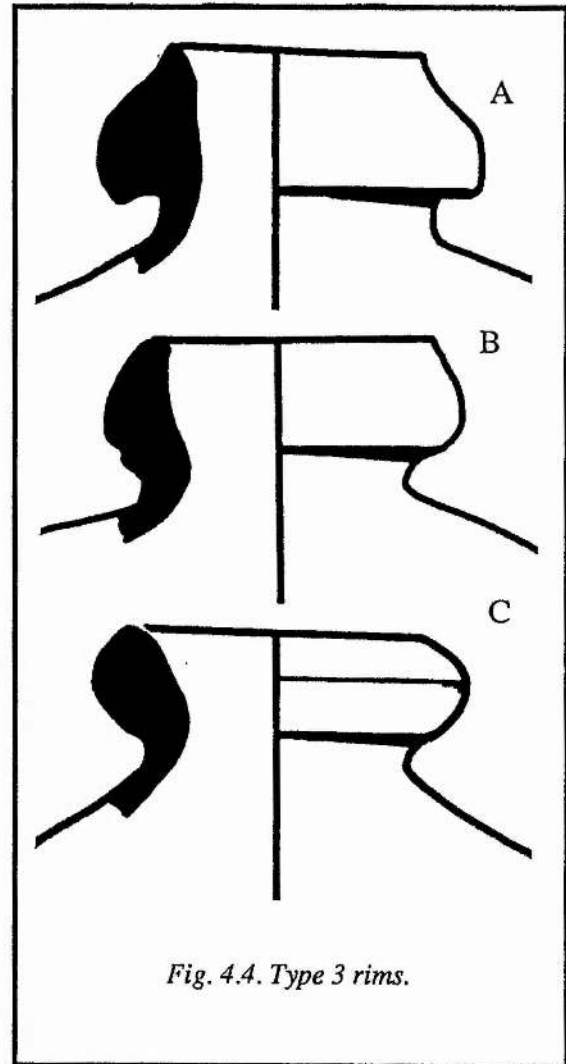
Fig. 4.2. Type 1 rim form.

Fig. 4.3. Type 2 rim form.

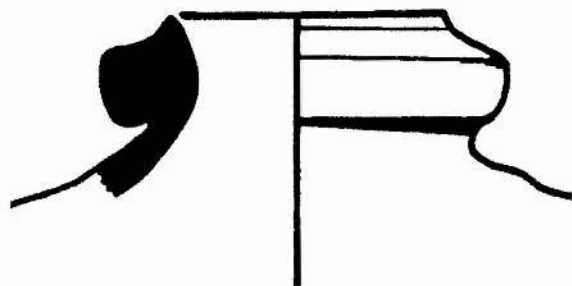
Type 2: **Fig. 4.3.** A shorter sturdier rim, slightly compressed, and smaller than other types. There is little distance from the shoulders and rim with some stylistic similarity to the thickened rim forms. Only one example was encountered in this study dated to 1554.



Type 3: A doughnut-like, thickened rim with a semi-circle or semi-triangular shape, formed with the palm of the potter's hand. **Fig. 4.4** Nos. A and B are from 1622, no. C is from 1724.

*Fig. 4.4. Type 3 rims.*

Type 4: **Fig. 4.5.** A semi-triangular thickened rim similar to **Type 3**, although with a slightly concaved upper section leading to a well defined lip. The variation in form is the result of a different manufacturing technique.

*Fig. 4.5. Type 4 rim.*

Type 5: Fig. 4.6. These rims may easily be confused with **Type 1** rims. They do not exhibit the thickened doughnut-like mouth which was heretofore considered a characteristic

of Goggin's Middle Style rims (*ibid.*: 10). The rims do not stand as high as the earlier types although construction methods are similar. The above example is from 1622.

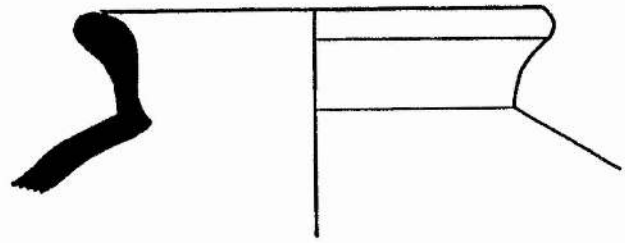


Fig. 4.6. Type 5 rim.

Type 6: Fig. 4.7. Encountered on the wreck of the *Constante* (1766) this rim type has a smoothed-over join on the exterior connecting it to the shoulders and a pronounced lip.

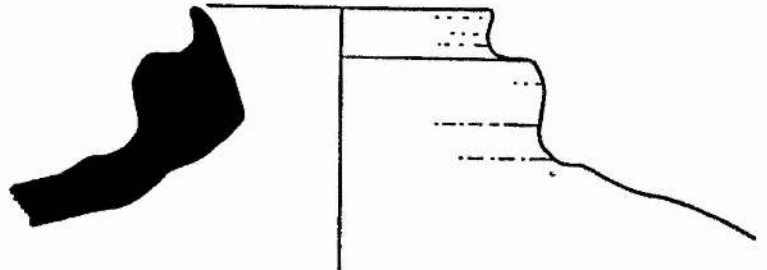


Fig. 4.7. Type 6 rim form.

BOTIJAS OF THE 16TH CENTURY

Olive jar-type botija material recovered from securely dated shipwrecks from the 16th century is far less abundant than that of the 17th and 18th centuries, and is limited to the second half of the century. In spite of scarce archaeological evidence, and because of the direct lineage of the jars from Mediterranean amphoras, it would be fruitless to attempt to assign a specific starting date for forms. It is doubtful whether three entirely new styles of jars suddenly replaced the "Early Style" two handled *cantimplora* as has been suggested by Goggin (Goggin, 1960:8). Similar jars were already a working part of the coastal society from which they developed, and similar forms have been recovered from shipwrecks of remote antiquity.

The half century following Columbus undoubtedly saw the refinement of the process of oceanic trade, and the equipment necessary to maintain it. The three types of *olive jar-type botijas* concentrated on in this study (Goggin Middle Style Type A, B, and C), were most probably the adaptive result of the requirements of that trade and thus evolved naturally from existing traditions. Lack of *olive jar-type botijas* and recovered shipwrecks from the first half of the 16th century, however, have made it difficult to assess the evolution of jar forms in that crucial phase of exploration. Some *olive jar-type botija* material has been recovered from the Molasses Reef wreck, but although it may be early, the site remains insecurely dated (Keith, 1987: 241).

Reasons for the lack of archaeological evidence and an absence of shipwrecks which include *olive jar-type* material, may simply be due to the process and evolution of trade. Not until the period of 1541 to 1550 did the American mainland port of Nombre de Dios (Portobello) reach the 100,000 *tonelada* mark in Spanish traffic (Chaunu and Chaunu, 1957; 6 (7): 95). For the first part of the century, the majority of trade was directed at the

small colonial outposts in the Indies and in discovering the new avenues of wealth lying in wait on the unexplored mainland. As the rate of migration and colonisation increased, and resources were used to support the colonists, an entire industry was reborn from the massive colonisation efforts. As the need for supplying the growing hundreds and thousands who chose not to return from their Atlantic crossing increased, the pressures for finding suitable containers in which to deliver the diets of their homeland increased.

Quite possibly the great demand for ceramic containers was not realised until the end of the 16th century. It has been argued that a lack of forest products (Fairbanks, 1972:143) nourished a resurgence of ceramic dependence in the latter part of the 16th century, as the demand for ships timbers would have been exhaustive to the Andalusian province. Even if this were the case, in the latter half of the 16th century barrels and casks may have been the preferred containers for holding commodities as barrel hoops were prolific on the 1554 sites (Skowronek, 1987:106; from Arnold and Weddle, 1978: 28, 29; and McDonald and Arnold, 1979). Also of note is the almost complete exclusion of *olive jar-type botijas* from the mid-16th century Basque whaler wrecks in Red Bay Labrador (ibid. from G.Gusset, 1986 pers. comm. to Skowronek).

In analysing the collections from the *Spanish Armada* of 1588 Martin(1979) found that the finds exhibited a wide variety of wares now believed to be typical of Spanish ships with official or "quasi-official" origins, although some of the most typical ceramic traditions were absent. Most specifically, and addressed by Martin (1979:284), is the omission of large **Type A** jars which predominate on shipwrecks in the Americas. Because the main commodities (biscuit, wine, bacon, cheese, tunny fish, salt beef, rice, beans, chick peas and garlic) were accounted in *quintales*, *fanegas*, or *pipas*, and were presumably contained in sacks or casks (Martin, 1979:283), the absence of the **Type A** jars (*botija peruleras*) is understandable.

In comparison with Spanish wrecks of the early 17th century which are rich in *olive jar-type botija* remains, what seems to be a lesser dependence on the jars is evident in earlier wrecks. Relative scarcity of 16th century specimens, however, may also be related to the specific environments of their post wreck depositions. The earliest *olive jar-type botija sherds* from a dateable shipwreck context are those from the 1554 Wrecks off of Padré Island. It is however noteworthy that from three large cargo vessels relatively few *olive jar-type botija* rims were recovered. It was reported that 7 "thickened" rim sherds and 8 Early Style rims were recovered with 718 unglazed and 21 glazed sherds (Skowronek, 1987:104). This may be because few were on board as discussed, or it may be due to the fact that the wrecks had been salvaged in both historic and recent times, in addition to lying in a dynamic shallow-water environment.

Archival research has recorded the presence of jars which fit the profile of *olive jar-type botijas* as far back as 1509 and shipping registers list several variations in terminology which include: *jarras, botijas, jarras de medio arroba, jarreticas, botijas de media azumbre, botijas de 1 arroba, botijas de medio arroba, botijas de cuartilla, jarretas, botijas de cuarta, botijas de cuartillo, jarros, botijas de a cuarto* (Lister and Lister, 1987: Appendix 2: 311 - 313; from the Diego Colón Flota from Sevilla, 1509 after Otté, 1964:482 -488, 490-93, 495-502). As this register is only 17 years after the initial voyage of discovery, it seems safe to assume that at least two versions of the three Goggin types existed in some form for the majority of the colonial period.

In ship registers dated 1542, 1546, 1548, 1549, 1550, 1567, 1572, 1574, and 1580, (ibid: 314) the terms *botija, botija perulera*, and *botijas of 1/2 arroba or medio arroba* have almost exclusively replaced earlier name variations. Made quite clear in the registers is the approximate capacities of the vessels: the larger holding one *arroba* and

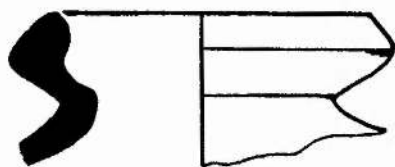


Fig. 4.8. Rim from 1554

the smaller holding $1/2$ *arroba*. Unfortunately, the only archaeological specimen available for recording from the middle of the century was the one rim example from the Padre Island wrecks of 1554 (described in the section on rims) and pictured again (Fig. 4.8). As this is the only example from this time period, caution must be exercised when trying to define a specific type, although it could well be an important transitional form, moving from a classic **Type 1** flared rim to the more common thickened rims found on later vessels.

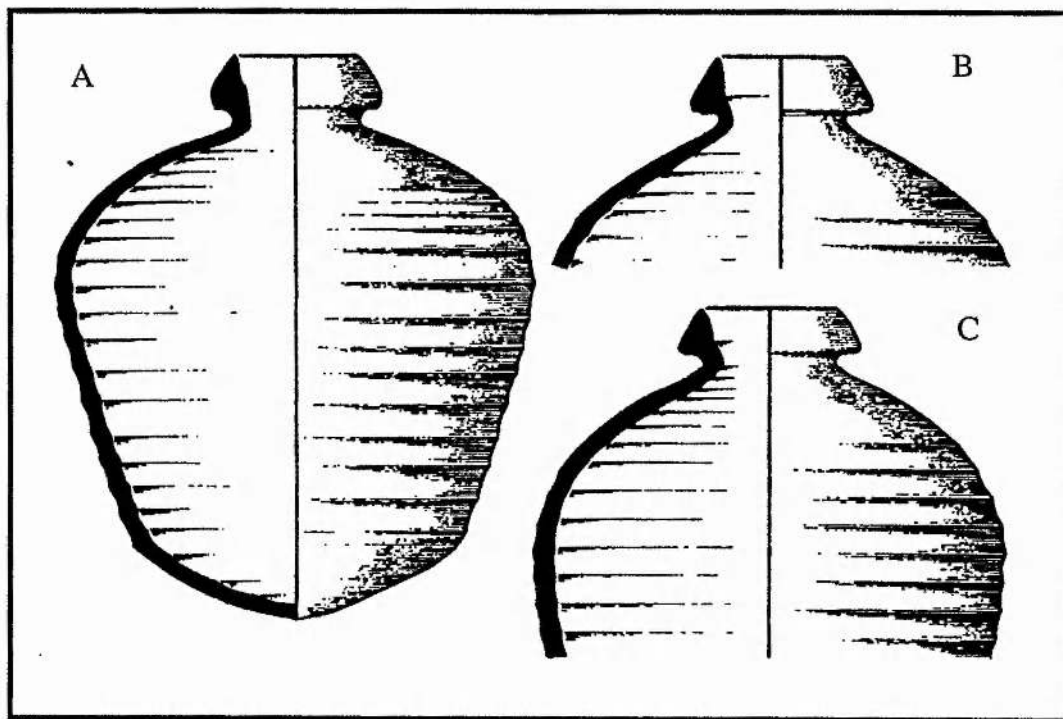


Fig. 4.9. Olive jar-type botijas. 1588. Scale 1/4. (after Martin).

At the end of the 16th century, two complete finds from the wreck of the *Trinidad Valencera* of the *Spanish Armada* of 1588 are the earliest securely dated complete *olive jar-type botijas* known to this researcher. Fig. 4.9 (from Martin, 1979: 280; # 1.TV) No. A is a "complete jar of reddish-buff grey-cored fabric with light external slip and dark

grey lining, probably a resinous sealing compound. Height 0.30 m, maximum diameter 0.235 m. Capacity 6.25 litres.”(ibid.). As discussed previously, the slip appearance is probably a result of the firing process. The rim is a **Type 3**, with the characteristic “V” shaped opening fashioned for a cork. The “resinous sealing compound” is likely from the pitch used to seal the cork. Example number B, on the top right, is the shoulder and rim section from the same wreck reported to have a light green glaze of similar fabric to the first example(ibid.). The partial jar on the bottom right, no. C, is similar to the first sample although there is no evidence of a “resinous lining” (ibid.)

Fig. 4.10 is another complete *1/2 arroba botija* recovered after Martin’s publication. Height is 306 mm. Maximum width is 248mm. Rim diameter is 60 mm. Max. rim width 85mm. The reddish-buff exterior paste is similar to Martin’s Fig.1.TV p. 281(ibid). The jar is slightly larger than the other example with a capacity of 7.1 litres.

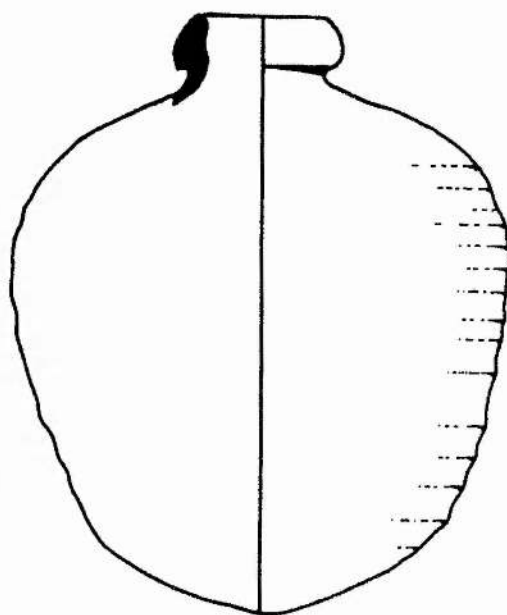


Fig. 4.10. Armada 1/2 arroba botija.

Fig. 4.11. (from Martin) Rim forms from the Spanish Armada, number A is an example of a **Type 5** rim possibly associated with flat-bottomed *botijas* and discussed later. It may, however, be a **Type 1** rim from an “Early Style” jar (Goggin, 1960) as described by Martin (ibid.). The reddish-buff grey cored fabric with slip-like appearance are more closely paralleled to the flat bottomed jars. At odds with this conclusion is the absence

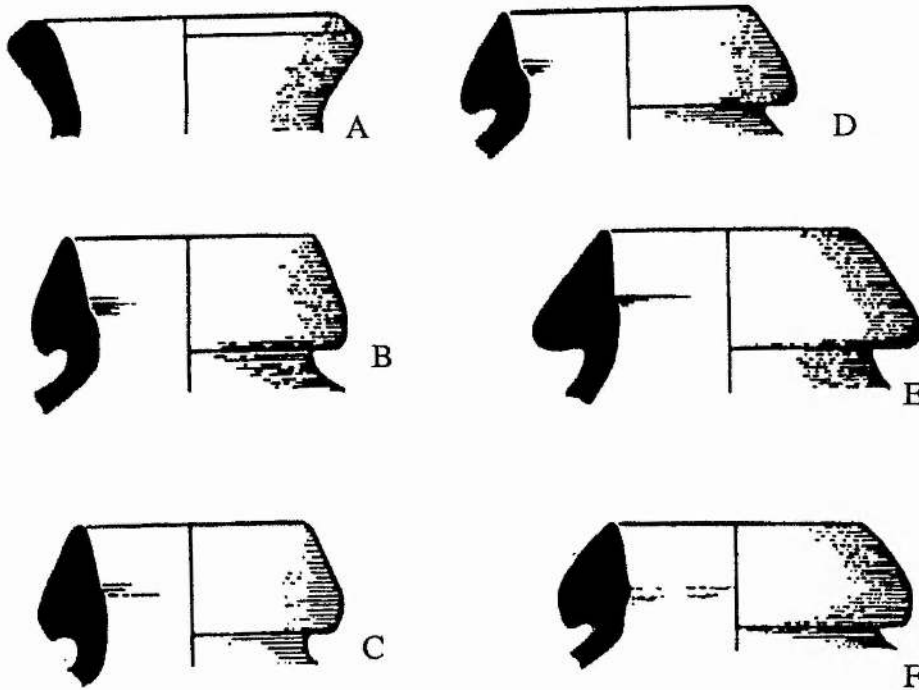


Fig. 4.11. Rims from the Spanish Armada.(after Martin).

of the round disc bottoms not recovered from the Armada wrecks and associated with the **Type 5** rims which are present in quantity on a wreck from the 17th century. Numbers B and C on the bottom left are **Type 3** rims of similar paste, with number C showing

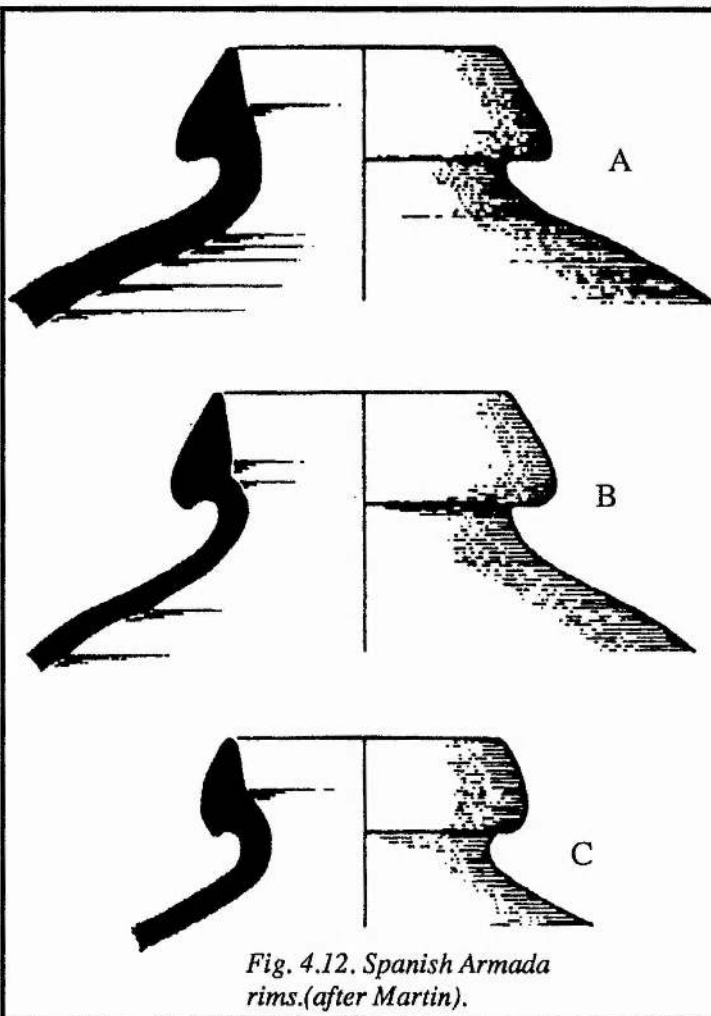


Fig. 4.12. Spanish Armada rims.(after Martin).

signs of a light internal glaze (Martin, 1979: 281). Number D is reported to have an "olive green internal glaze" (ibid.) Number B, the middle left rim, has no signs of a glaze although example F has an internal "olive green glaze" (all examples are from the *Trinidad Valencera*)(ibid.).

Fig. 4.12 Number A is reported to have a pinkish external slip (ibid.). Number B is the only published example from the *Santa Maria de la Rosa*, and is of reddish-buff fabric

with a light slip-like appearance inside and out. The bottom jar is of a reddish-brown grey-cored fabric with a slip-like appearance on the exterior with an internal olive green glaze (ibid.), also from the *Trinidad Valencera*.

Fig. 4.13 (from Martin) Is a basal sherd comprised of three pieces of reddish-buff grey cored fabric with a light slip appearance on the exterior and a darker slip appearance on the exterior (ibid.). The scar running around the exterior of the jar and described as a “mould flash” is now thought to be a chuck scar from holding the jar upright after an upside down throwing process.



Fig. 4.13. Basal sherd from 1588. After Martin. Scale 1/2.

The earliest examples of **Type A** jars known to this researcher are from the late 16th century wreck off Bermuda and now in the collection of Harry Cox.

Fig. 4.14 (Plate 4.1, left) A late 16th century intact *botija perulera*. Globular form with wide shoulders sloping to a rounded base. Surface paste has visible mineral inclusions with no evidence of a glaze. Exterior is buff to off-white in colour giving the familiar

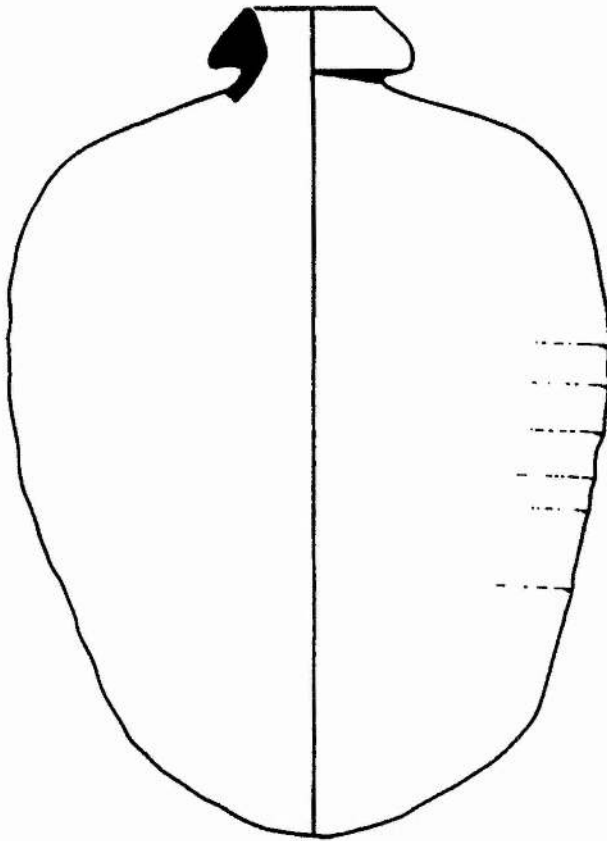


Fig. 4.14. *Botija perulera* late 16th century.

Fig.4.15. (Plate 4.1, right) A late 16th century intact *botija perulera*. Similar to the above jar although exterior paste is more tan in colour. The jar has three vertical slashes on the rim which may be evidence of an incised mark although they may be natural abrasions. Height is 441mm. Max. width is 316mm. Rim diameter is 75mm. Max. rim width is 109mm. Volume is 18.2 litres.

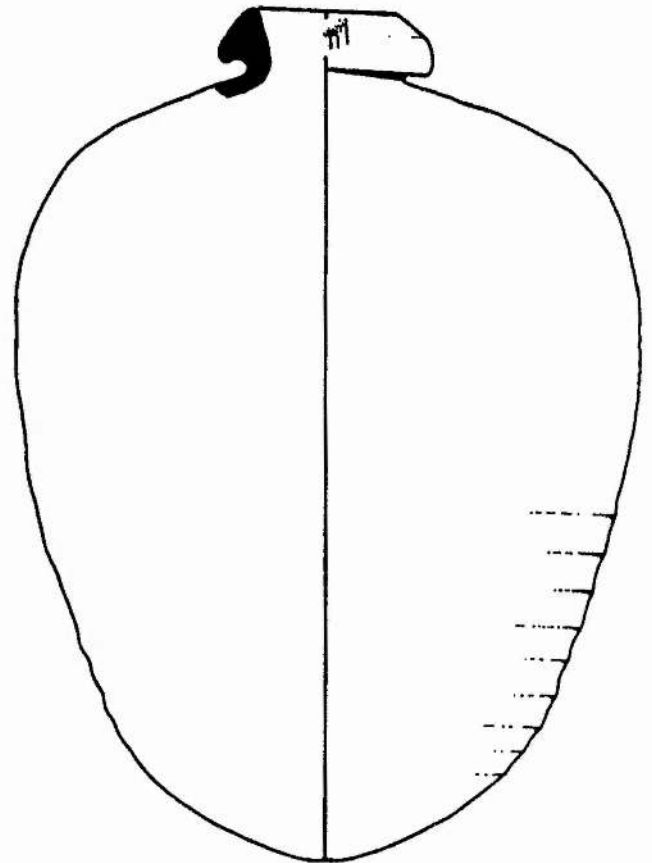


Fig. 4.15. *Botija perulera* late 16th century.

“white slip appearance”. Exterior is well smoothed, although turning marks are visible. The jar is more squat than the later varieties with the rim slightly more compressed. Height is 437mm. Max. width is 307mm. Rim diameter 65mm. Rim width 106mm. Volume is 17.5 litres.

SUMMARY OF 16TH CENTURY FORMS

Only in the latter part of the 16th century do the jars start to appear in sizeable quantities. In general the two **Type A** jars recovered from the 16th century context are more squat than later jars and appear to be more smoothed. The “white slip” appearance is more pronounced on the two jars, although this may not be a relevant factor. The two **Type B** smaller *1/2 arroba botijas* could very easily fit into a later time period given the similar characteristics to later jars. More diagnostic is the radical difference between the rim profile of the 1554 example which may be a transitional form. The thirty years between the Padré Island wrecks (1554) and the *Spanish Armada* (1588) appear to be an important chronological link in the development of the jars if we assume that the 1554 rim is a representative example.

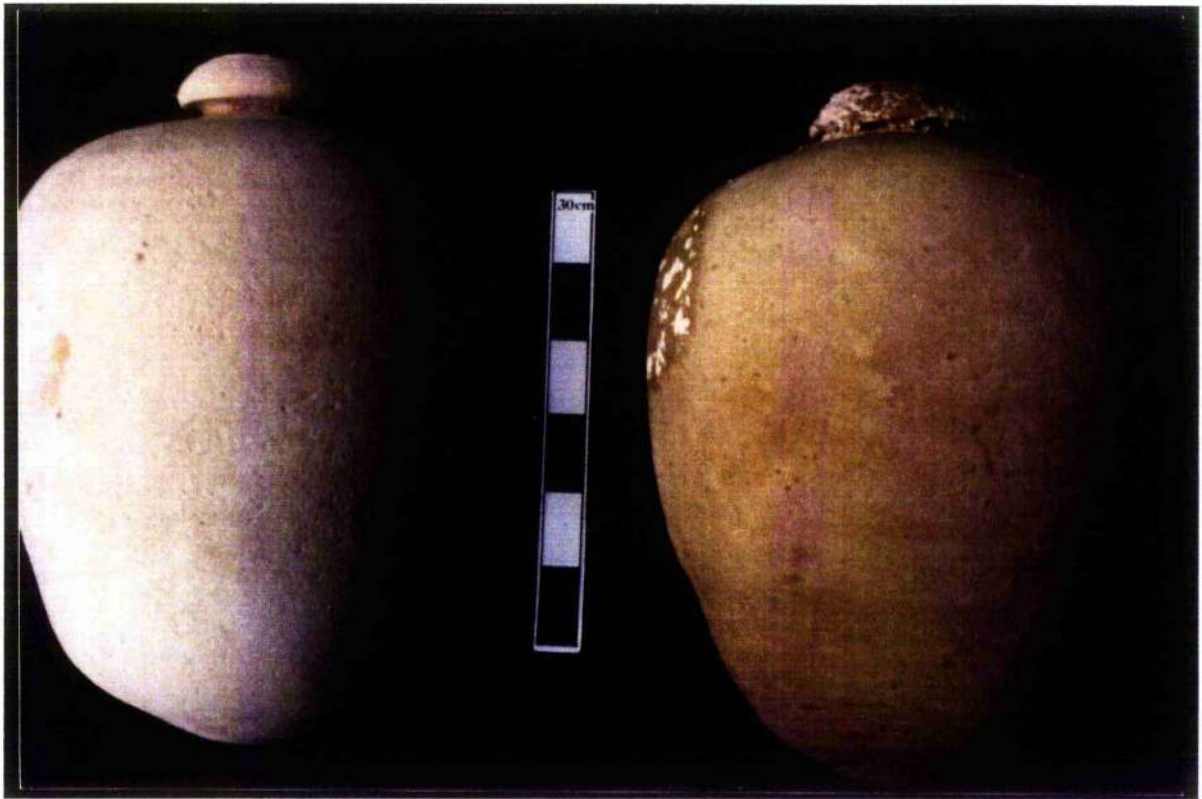


Plate 4.1. Olive jar-type botijas. Late 16th century.

17TH CENTURY OLIVE JAR-TYPE BOTIJAS

The wrecks recovered from the first half of the 17th century have provided a large quantity of *olive jar-type botija* material. The wrecks of the *San Antonio* 1621, the *Nuestra Señora de Atocha* 1622, and the *Concepción* 1641, have opened a large window onto the ceramic types carried by the ships of the century. It is considered important that recovered samples of the wares are much more numerous than from wrecks of the 16th century, although not as numerous as assemblages from the early 18th century, and may indicate that a much greater dependence on the jars had developed as a result of the economics of trade or a change in resources available to fabricate alternative storage methods.

As the recovery process of the *Atocha* (1622) was more closely observed by this researcher, a greater knowledge of the entire wreck deposition was gained. In addition to the large quantity of *olive jar-type botija* material recovered, a considerable number of barrel hoops were also recovered. This suggests that in 1622 at least, a great deal of storage was still accomplished through barrels or casks. There is opportunity for further research in this area. Comparisons of hoop sizes and quantities from the shipwreck assemblages used in this study may answer some of the questions that can only be addressed when entire assemblages are studied and relationships considered.

The similarities between the late 16th century jars and the early 17th century examples are many. Rim forms are certainly similar, though there is a much greater abundance of the larger **Type A** *botija peruleras* present in the 17th century assemblages. The 17th century **Type A** jars are more tapered (less squat) and slightly taller than the earlier examples although capacities are similar. Compared to the only two **Type A** jars thought

to be from a 16th century context, the surface of the vessels of the earlier jars appear to be more smoothed. The small number recovered from 16th century contexts, however makes comparative study less definitive, and should be approached with caution.

A more telltale and readily apparent difference is the complete lack of glazing on any jars or sherds recorded for this study from 17th century wrecks. This may suggest a shift in the types of foodstuffs carried in the jars of the century or possibly the realisation that the green lead glaze was toxic. If glaze poisoning was known to Spaniards of the 17th century, however, it seems to have been forgotten in the 18th century. Another attribute that appears to be restricted to the sample from the first half of the 17th century is the markings found on the rims and shoulders of jars. The marks, some stamped when the clay was wet, and others incised after the jars had dried, therefore seem to be another important temporal indicator.

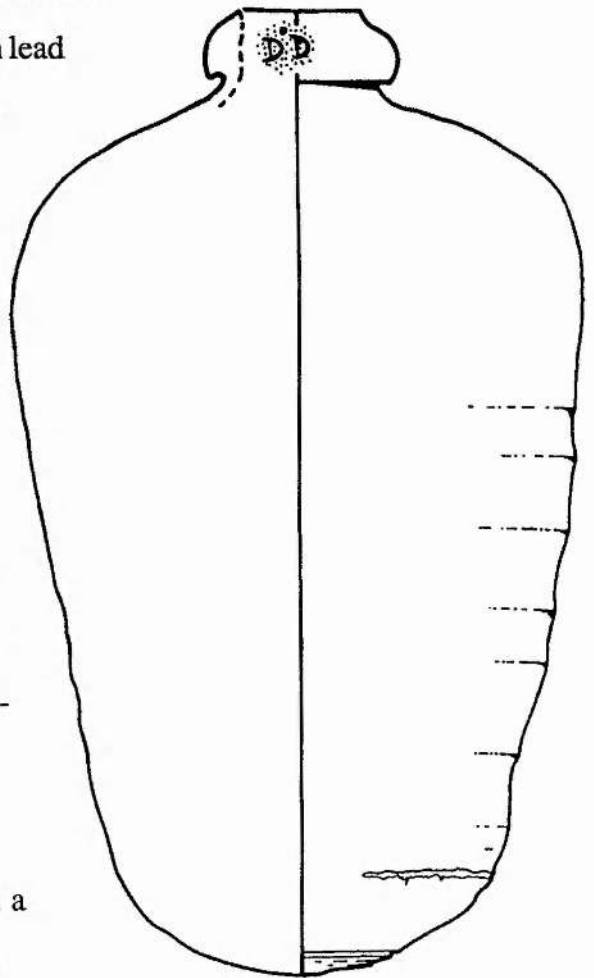


Fig. 4.16. Botija Perulera. 1621.

The earliest examples recovered from a 17th century context are those from the *San Antonio* (1621) wrecked in Bermuda and salvaged by Teddy Tucker. Purchased by the Bermuda government as part of the "Tucker Treasure", three examples of *olive jar-type botijas* are now housed at the Bermuda Maritime Museum on Ireland Island in Bermuda. Fig. 4.16 is from the *San Antonio* (1621). This *botija perulera* is possibly

the earliest 17th century **Type A** example yet recorded. The rim is a **Type 3** with a stamped double "D" mark. The rim mark is also the earliest example of stamped rim markings that is known to me. The scratches on the example from the late 16th century have not definitively been ascertained as intentional, but may be inscribed marks. Paste is typical *botija* fabric with a lining of pitch on the interior. There is some indication of a scar near the base although it does not extend around the wall of the entire vessel. Capacity is 17.1 litres.

Fig. 4.17., is a $1\frac{1}{2}$ arroba *botija* recovered from the *San*

Antonio with the cork still in place. There is no glaze

evident with the paste having the familiar white slip

appearance. The rim is a **Type 3** although more

half-circular than the semi-triangular appear-

ance of the earlier examples. The outer turning

ridges are worn and may be a result of abrasion.

Capacity is 5 litres. On the bottom near the base

there are small turning grooves which appear on

several other examples. There is

no evidence of a scar around the

base.

Fig. 4.18 is a conical *botija* from the *San Antonio* (1621) and is the

earliest recorded example of this type. It marks an important tem-

poral indicator in comparing collections of similar **Type C** vessels.

The small vessel was recovered covered with marine growth and

conserved. It has a **Type 3** rim which is lopsided slightly. Small

grooves encircle the jar close to the tip of its pointed base.

Capacity is 2.15 litres.

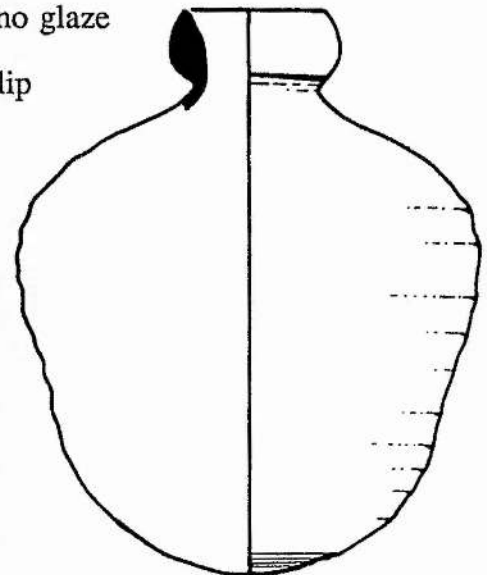


Fig. 4.17. 1/2 arroba botija. 1621.

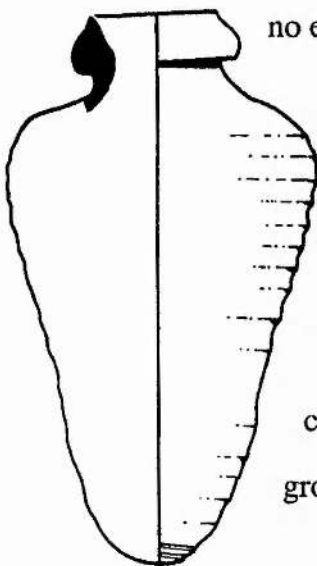


Fig. 4.18. Conical Botija. 1621.

As expected with the discovery of undisturbed remains from the lower hull section of any Spanish galleon of its period, the wreck of the *Atocha* (1622) has yielded a large amount of *olive jar-type botija* material. The collection includes nine intact and reconstructed vessels: four *botijas peruleras*, two *1/2 arroba botijas*, and two *botijuelas*. All examples appear to be wheel thrown and made of the characteristic *olive jar-type* paste: evidence of poor clay preparation, numerous gritty inclusions, and air bubbles are common features.

Although the collections from the 1986 excavations were not completely quantified due to the enormous quantity of sherds recovered, every sherd was visually examined and sorted. It has been determined using the average weight of intact rims and dividing the total weight of the partial rim sherds, and adding the complete recovered vessels that at least 108 jars were present in the lower hull section. The enormous number of body sherds, however, suggests a much greater quantity. Because of the large number of finds and the nature of the wrecksite and its deep water environment, it is believed that the sample reflects one of the most complete representations of the types of *olive jar-type botijas* employed in the early 17th century.

All of Goggin's Middle Style forms were encountered on the 1622 wreck (**Plate 4.2.**) with the addition of an entirely new type: the *flat bottomed olive jar-type botija*. Apparently confined to the early part of the 17th century, this large sample included a number of rim markings, and incised marks, also inscribed on the shoulders of some of the jars. The marks only occur on **Type 3** rims with the more triangular form thought to be associated with the larger *botija peruleras*. Shoulder markings are also thought to appear solely on the larger jars, as the only marks with identifiable forms imply.

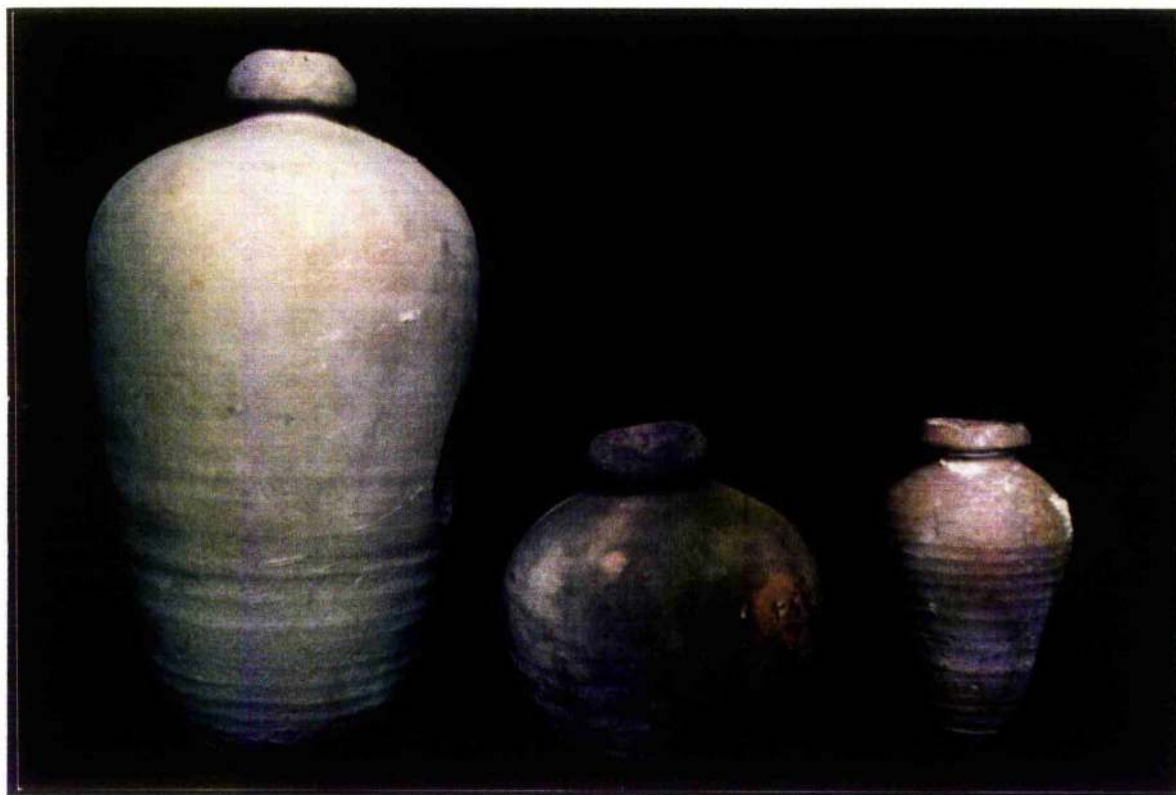


Plate 4.2. The Atocha 1622. Olive jar types.

Fig. 4.19. Complete jar with exterior white slip appearance fairly uniform. There is a large abraded area where a bubble seems to have worn away. A crack near the neck has dried pitch oozed around it. The shoulder has an incised Roman numeral "X". Paste is pinkish with characteristic *olive jar-type* (sandy particles) temper. There is no glaze apparent on the exterior although the interior is covered with a thick coating of pitch which appears to have been the jar's

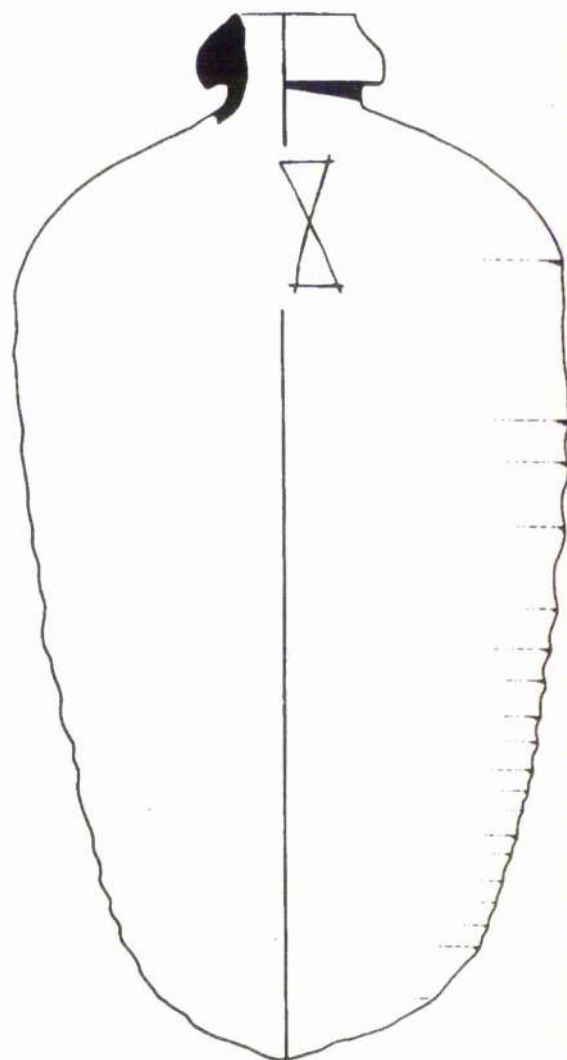


Fig. 4.19. Botija from 1621.

contents as evidenced by the seepage at the shoulder through a crack extending from the base of the neck past the shoulder. Height .56m, maximum diameter .30m, circumference .93m, capacity 18.06 litres.

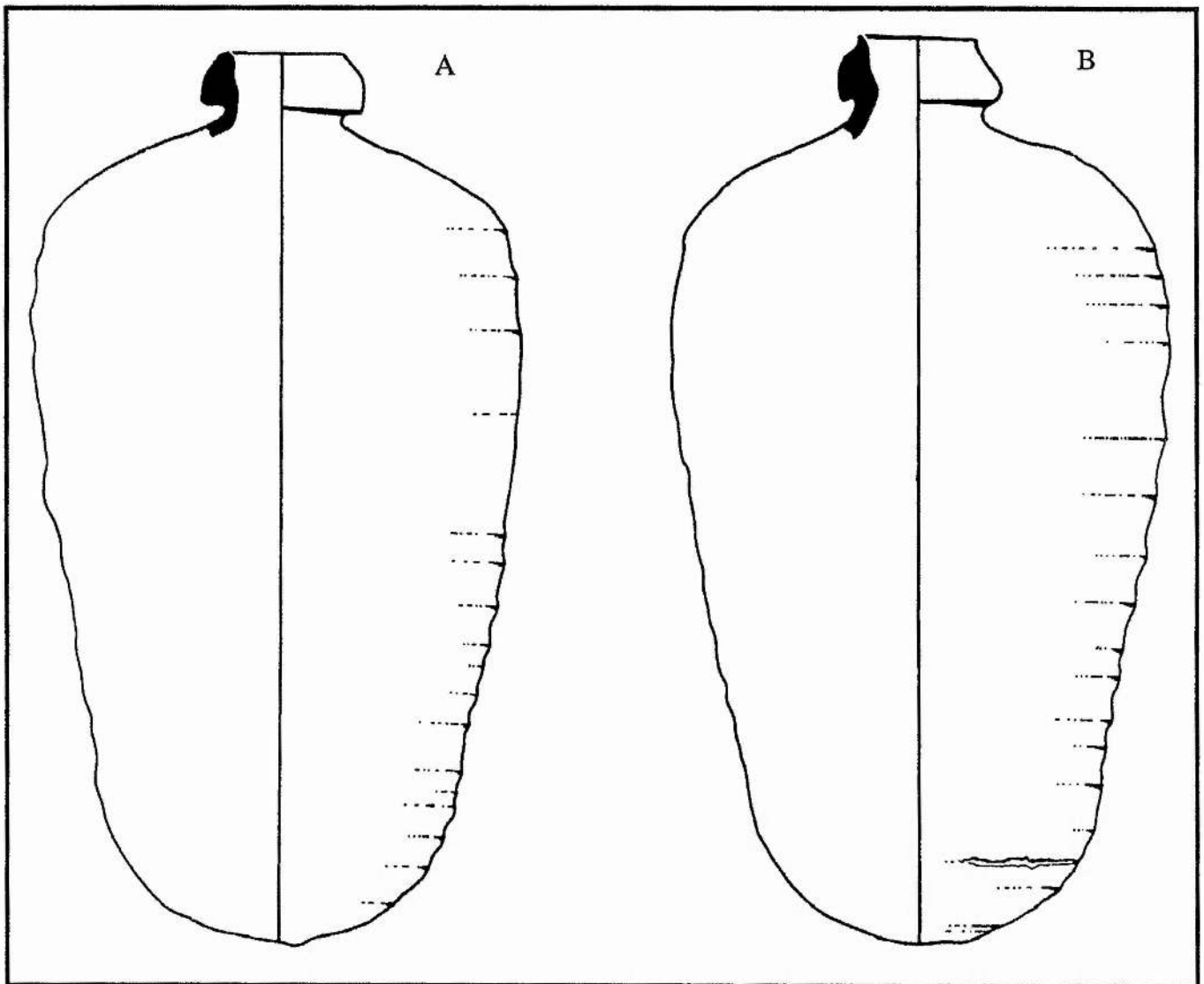


Fig. 4.20. *Botijas peruleras*. 1622.

Fig. 4.20. From the *Atocha* (1622), number A is a complete jar with several air bubbles in the paste visible on the exterior. Such low quality clay preparation confirms the haste

of production. The rim and one side of the interior are coated with pitch which seems to have seeped out of a visible crack on one side. The paste is light tan tempered with fine sandy particles. Height .53m, Maximum diameter .285m, circumference .92, capacity 16.84 litres.

Fig. 4.20. Number B is a complete jar found sealed with cork, of reddish-buff to tan grey cored fabric, tempered with fine sandy particles. There is no evidence of glaze on the interior or exterior. There is pitch covering the interior rim below the neck extending to the base of the jar coating half of the interior. The pitch appears to have seeped out of a hole in the side which corresponds to the side that is covered in resin, therefore it is believed the jar contained pitch. A partial scar can be seen running near the base. Height .55m, maximum diameter .28m, circumference .92m, capacity 17.04 litres.

Fig. 4.21. Example number A is a complete jar slightly smaller than the other four. It has similar paste and manufacture characteristics. There is no evidence of pitch or glaze on the exterior or the interior and no visible markings although the rim and shoulders are fairly well covered in barnacles. The paste is light tan with tempering of fine sandy particles. Capacity 16.10 litres.

Fig. 4.21. Number B is a complete reconstructed jar, tan to pink exterior paste colour with whitish slip evidenced between the finger grooves near the base. Unusual characteristics include incised marks on the shoulder depicting a five pointed star and an arrow with an "X" through it (illustrated **Fig. 4.53.**) Height .50m. Maximum diameter .304m. Capacity 17.36 litres. Small evidence of a scar running .056m from base.

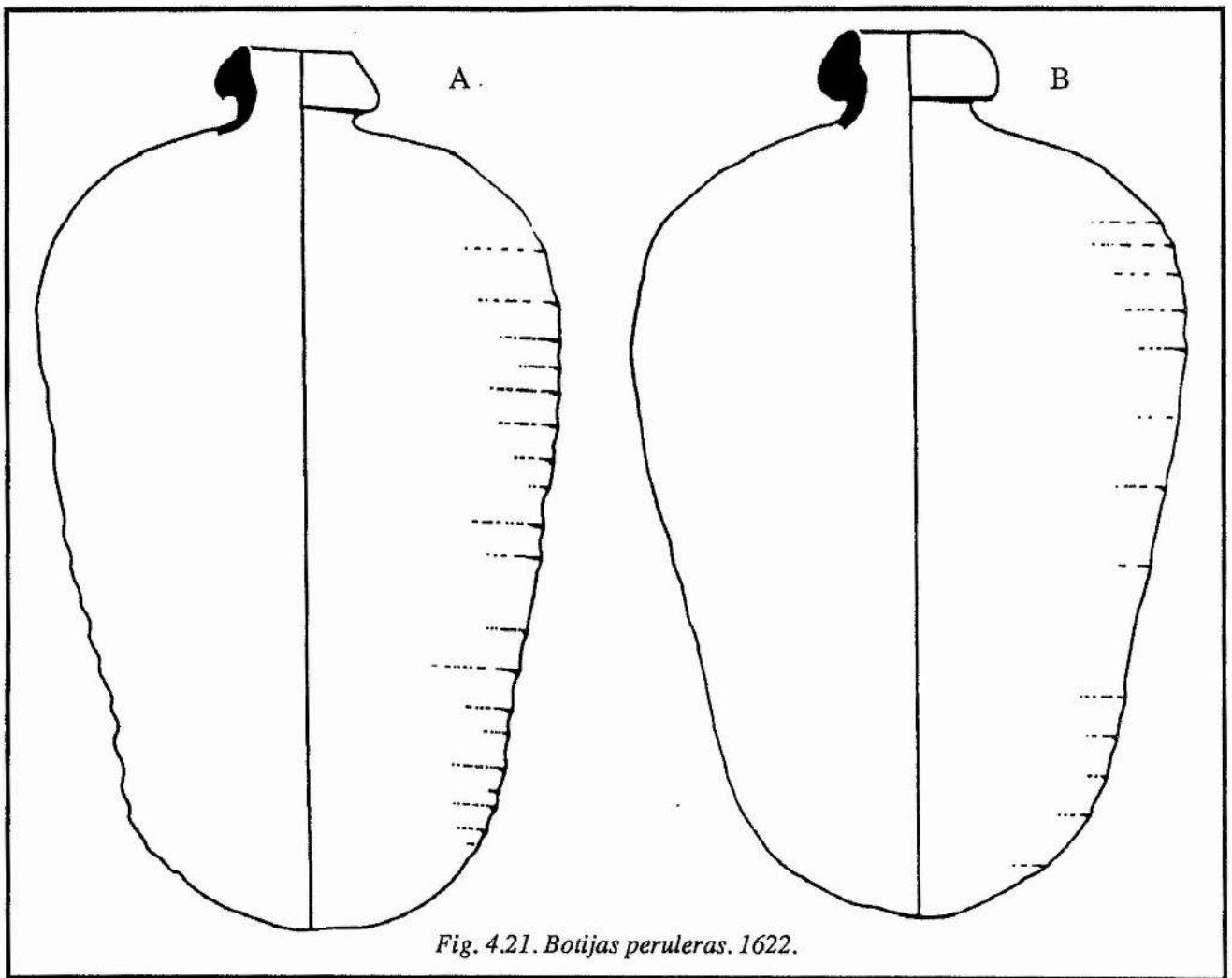


Fig. 4.21. Botijas peruleras. 1622.

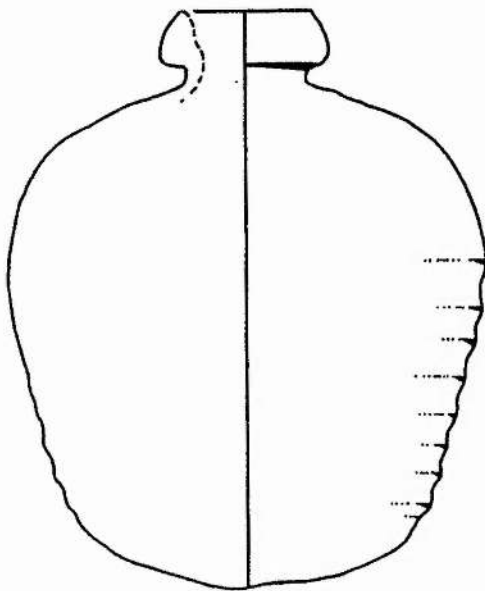


Fig. 4.22. 1/2 arroba botija. 1622.

Fig. 4.22. One of two small *1/2 arroba botijas* recovered intact. A complete jar, heavily encrusted tan-nish paste, more crudely constructed than the other **Type B** jar and a bit larger. There is some visible difference in the paste and rim form between the two which may indicate separate origins or different places of manufacture. No evidence of external glaze or slip, though a positive check for internal glaze was not done before the item was removed for

display. The paste is light tan in colour tempered with fine sandy particles. Height .32m, maximum diameter .245m, circumference .79m, capacity 6.38 litres.

Fig. 4.23. The second complete **Type B** jar is constructed of reddishbuff fabric which is more dense than the usual *botija* material, more care seems to have been taken in construction. The exterior vessel walls are stained black, to cream, to brown-green, with a deep reddish brick core. Tempering is with fine sandy particles. There is no exterior or interior evidence of glaze although a slight dark stain is evident on interior. The colouration is most likely a result of resting on the seabed. Height .27m, maximum diameter .24m, circumference .77m, capacity 5.58 litres.

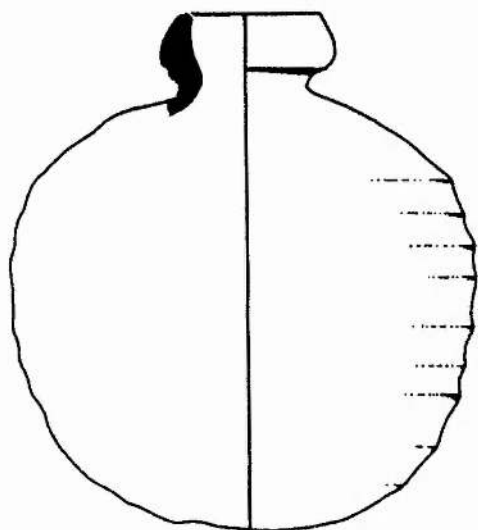


Fig. 4.23. 1/2 arroba botija. 1622.

Fig. 4.24. This is one of two complete **Type C** conical shape jars with mouth and rim similar to larger vessels (**Type 3**) designed for cork sealing, with sloping shoulders descending sharply to rounded base. The area around the base has rough scrapings and looks as if it was laid to dry on grass or straw, although this is not definitely indicated. The paste is tan to terracotta, with visible sand tempering, and no visible markings. There is no apparent glaze on interior or exterior, however, there is a pitch coating extending

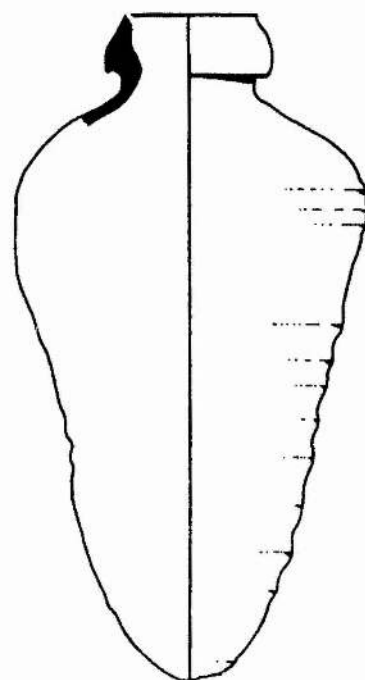


Fig. 4.24. Conical botija . 1622.

from the mouth of jar down the interior of one side. Height .345m, maximum diameter .175m, circumference .58m, capacity 2.74 litres.

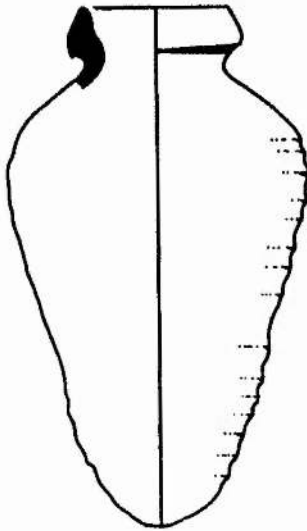


Fig. 4.25.
Conical botija. 1622.

Fig. 4.25. The smaller of the two conical *botijas* is similar to Fig. 4.24 in shape although smaller with fewer surface blemishes. There is no visible evidence of interior or exterior glaze. A small sample of pitch or "*pez*" was removed from the jar. The paste is light tan tempered with fine sandy particles. Height .27m, maximum diameter .15m, circumference .49m, capacity 1.62 litres.

Fig. 4.26. (after Martin) *Botija* base from the *Santa Ana Maria* (1627). Recorded by Martin in 1973, this base of a **Type C** *botija* is slightly larger than the two above and dated five years later. Martin described the paste as "Red earthenware. Irregular tan slip internal and external." (Martin, 1990: letter on file). As the small **Type C** jars have not yet been recovered in earlier or later contexts, their existence may be restricted to the first part of the 17th century as the finds suggest. Recovered from the wrecks of the *San Antonio* (1621), the *Atocha* (1622), and the *Santa Ana Maria* (1627), these small conical jars represent a distinct category.

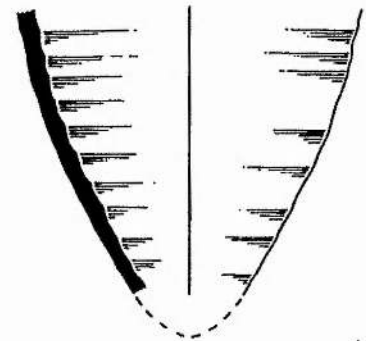


Fig. 4.26. Base from
conical botija. 1627.

EARLY 17TH CENTURY RIMS

The collection of rims from the round-bottomed jars show some of the variations possible within the **Type 3** category. The following rims (Figures 4.27 - 4.34) are from the 1622 collection of the *Atocha*. It is important to note that of the entire collection, there are no examples that exhibit any close characteristics to the later **Type 4** thumb form fashion. Most, if not all of the variations exhibited in the rims can be attributed to different palm angles while bracing the rim against the neck. It is thought that the majority of rims are from the larger *botija peruleras* although the *1/2 arroba* rims are very similar during this period. The only slight variation may be a tendency to slightly round the rim giving it a more "half circle" form. This tendency is more distinguishable in the 18th century examples.

The most interesting aspect about rims from this period is the quantity and variety of shipper's marks. Again, the fact that the marks appear in obvious quantity in such a narrow time frame makes it an important temporal indicator. Rim markings were present in all three early 17th century collections studied (*San Antonio* (1621), *Atocha* (1622), *Concepción* (1641). The partial collection of rims and complete jars from the unidentified Spanish wreck off Barbuda thought to date to 1695 did not include any visible rim marks. It will be necessary, however, to study other wrecks from late 17th century contexts before a *terminus ante quem* can be established for the practice. Lack of any marks from the collections of jars recovered in the early 18th century at least indicates that the practice had died out by that time.

Fig. 4.27. Nos. A - F. This figure shows a group of six rims from the *Atocha* all with **Type 3** manufacture characteristics. The example on the top left (no. A) shows evidence of a slightly raised lip as does the one below it (no. B). This raised lip attribute varies amongst

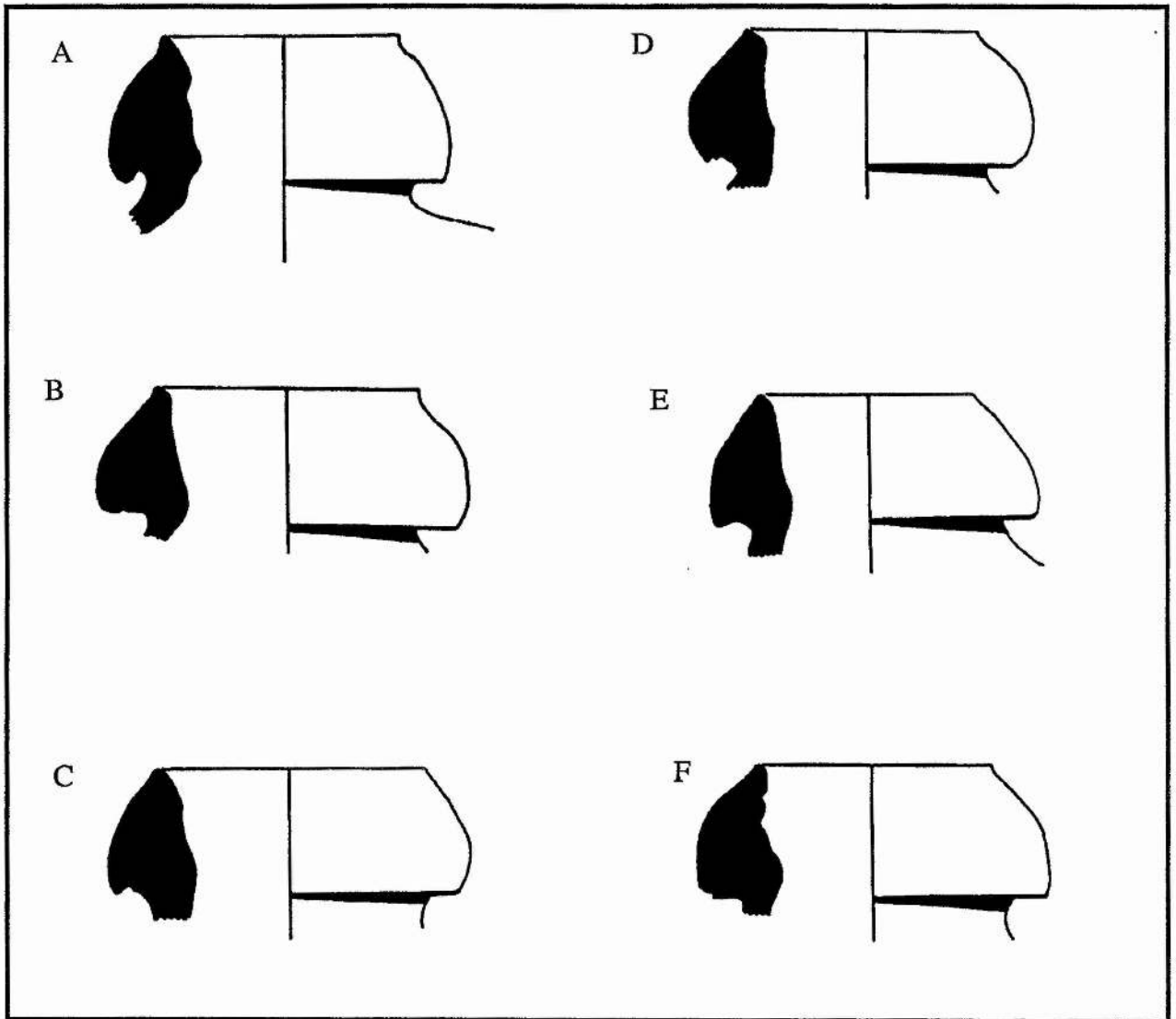


Fig. 4.27. Rims from 1622. 1/2 scale.

the sample without specific association to any other rim attributes. The distance from neck to rim varies slightly on all examples which is expected with the crude manufacturing technique. The joins under the flared and thickened ring on the exterior is left unsmoothed. The interior mouths all look capable of holding a natural cork stopper as the general tendency is for a "V" shape. **Fig. 4.27 no. A** is a **Type 3** rim with a slightly extended lip. The irregular interior looks as though the potter pinched the top of the mouth to form the lip. A cork seal would have been difficult. **Fig. 4.27 no. B** is a **Type 3** rim

with evidence of a join under the thickened rim. **Fig. 4.27 no. C** is a **Type 3** rim with a tapering interior "V" and some evidence of a join under the exterior thickened rim. **Fig. 4.27 no. D** is a **Type 3** rim with a sharper angle nearing the top of the exterior rim and some evidence of a join on the exterior lower thickened rim. **Fig. 4.27 no. E** is a **Type 3** rim with a well smoothed exterior lacking a visible lip and smoothed joins. **Fig. 4.27 no. F** is a **Type 3** rim, sloppily applied, with evidence of joins on the interior and exterior.

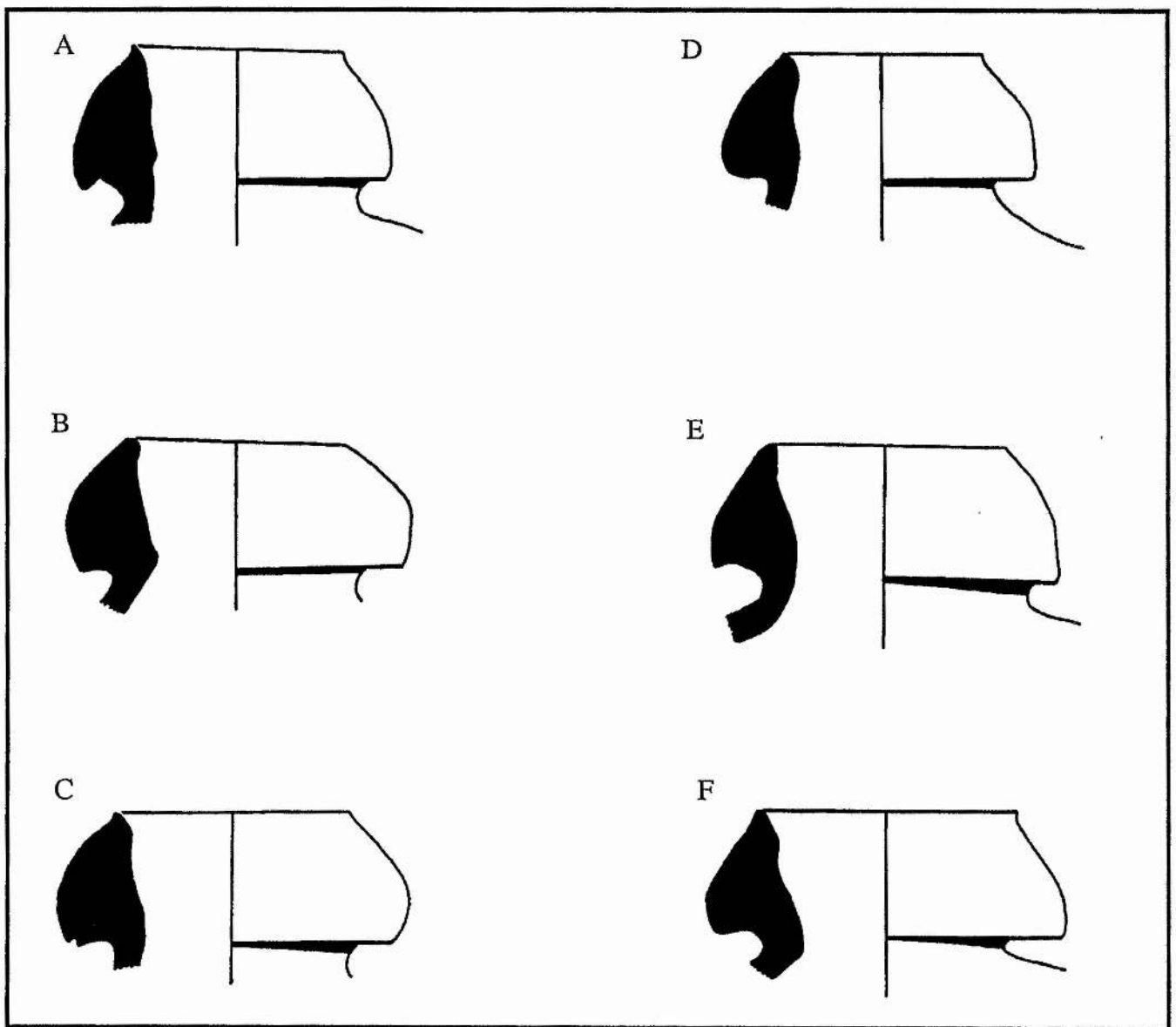


Fig. 4.28. Rims from 1622. scale 1/2.

Fig. 4.28. Nos. A - F. Rims from 1622. **Fig. 4.28 no. A** is a **Type 3** rim with an almost vertical interior wall. The two ridges on the interior wall may be where the clay formed a profile of the potter's finger as he braced the rim. There is slight evidence of a join under the exterior rim. **Fig. 4.28 no. B** is a **Type 3** rim with a sharper angle on the upper exterior. The interior is nicely sloped for a cork closure. **Fig. 4.28 no. C** is a **Type 3** rim with a visible join on the underside of the exterior thickened rim. **Fig. 4.28 no. D** is a **Type 3** rim well smoothed and a slight angle to the exterior rim on one side. **Fig. 4.28 no. E** is a **Type 3** rim with well smoothed joins and a slightly overhanging exterior thickened rim. **Fig. 4.28 no. F** is a **Type 3** rim with a smoothed join under the exterior rim.

Fig. 4.29 No. A is a **Type 3** rim with a visible interior join. **Fig. 4.29 No. B** is a **Type 3** rim with a slight ridge on the interior wall. **Fig. 4.29 No. C** is a **Type 3** rim with a more obvious interior join visible. **Fig. 4.29** rims are thought to have come from **Type A** jars.

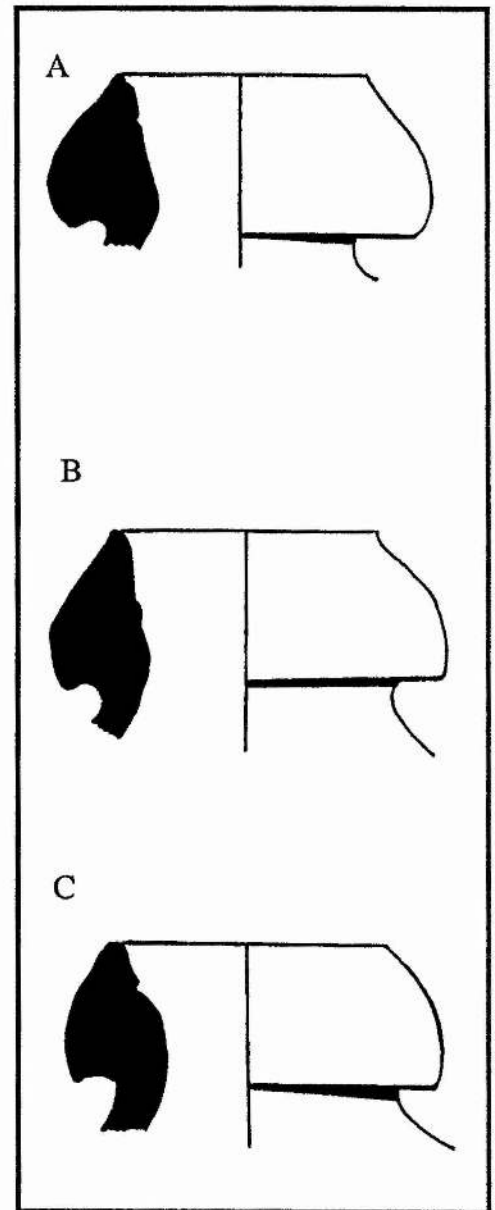


Fig. 4.29. Rims from 1622.

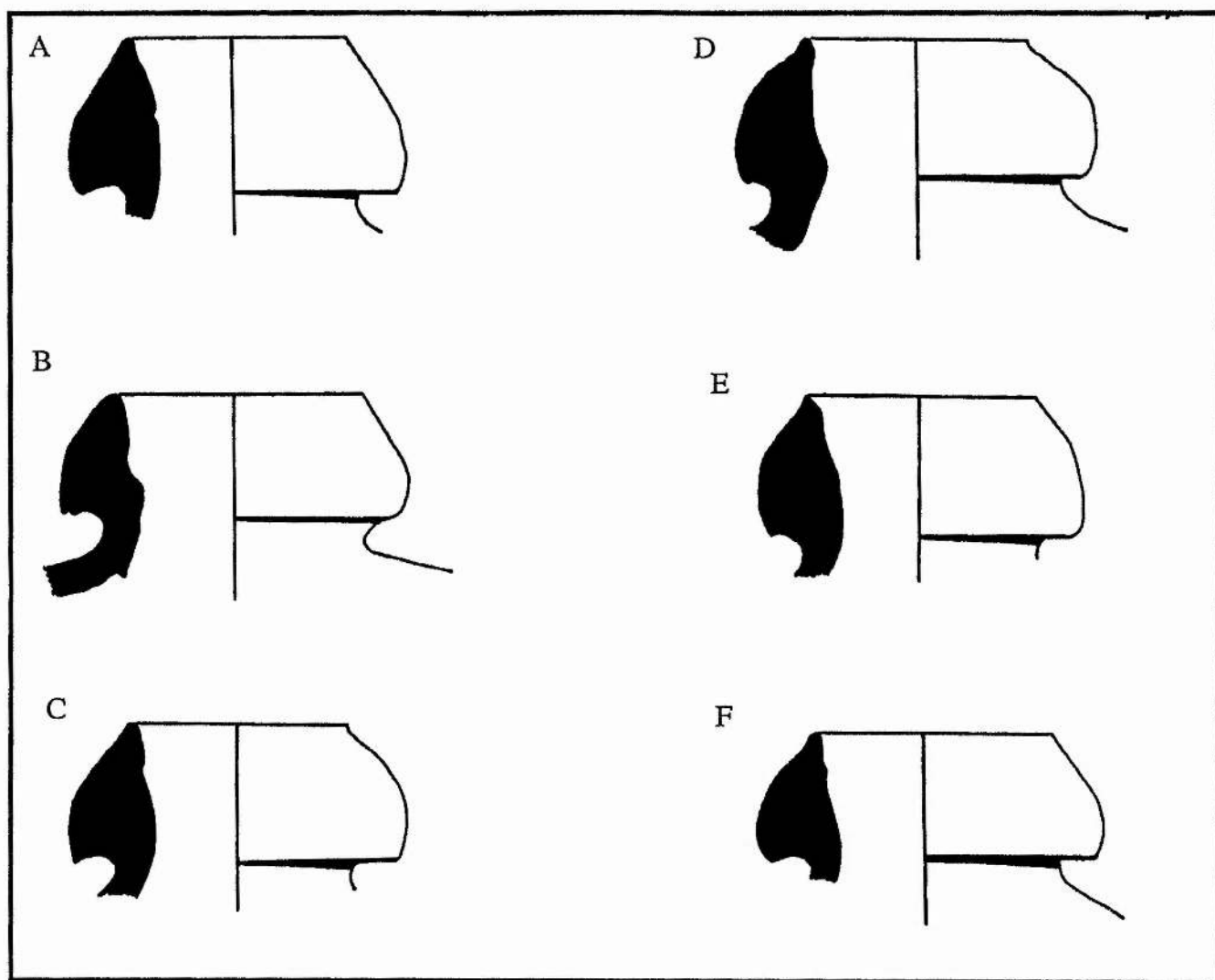


Figure 4.30. Olive jar-type botija rims from 1622.

Fig. 4.30. Nos. A - F. Rims from the *Atocha*. (1622). **Fig. 4.30 no. A** is a **Type 3** rim with a well smoothed exterior and slight evidence on the sloping interior of a join. **Fig. 4.30 no. B** is a **Type 3** rim with an irregular interior mouth which may have been caused by the potter's bracing finger moving up the mouth and pressing the tip in the middle of the thickened ring. **Fig. 4.30 no. C** is a **Type 3** rim with a well smoothed exterior and slight evidence on the sloping interior of a join. **Fig. 4.30 no. D** is a **Type 3** rim with a well smoothed exterior and interior. **Fig. 4.30 no. E** is a **Type 3** rim with a well smoothed exterior and interior. **Fig. 4.30 no. F** is a **Type 3** rim with a slight ridge on the interior wall.

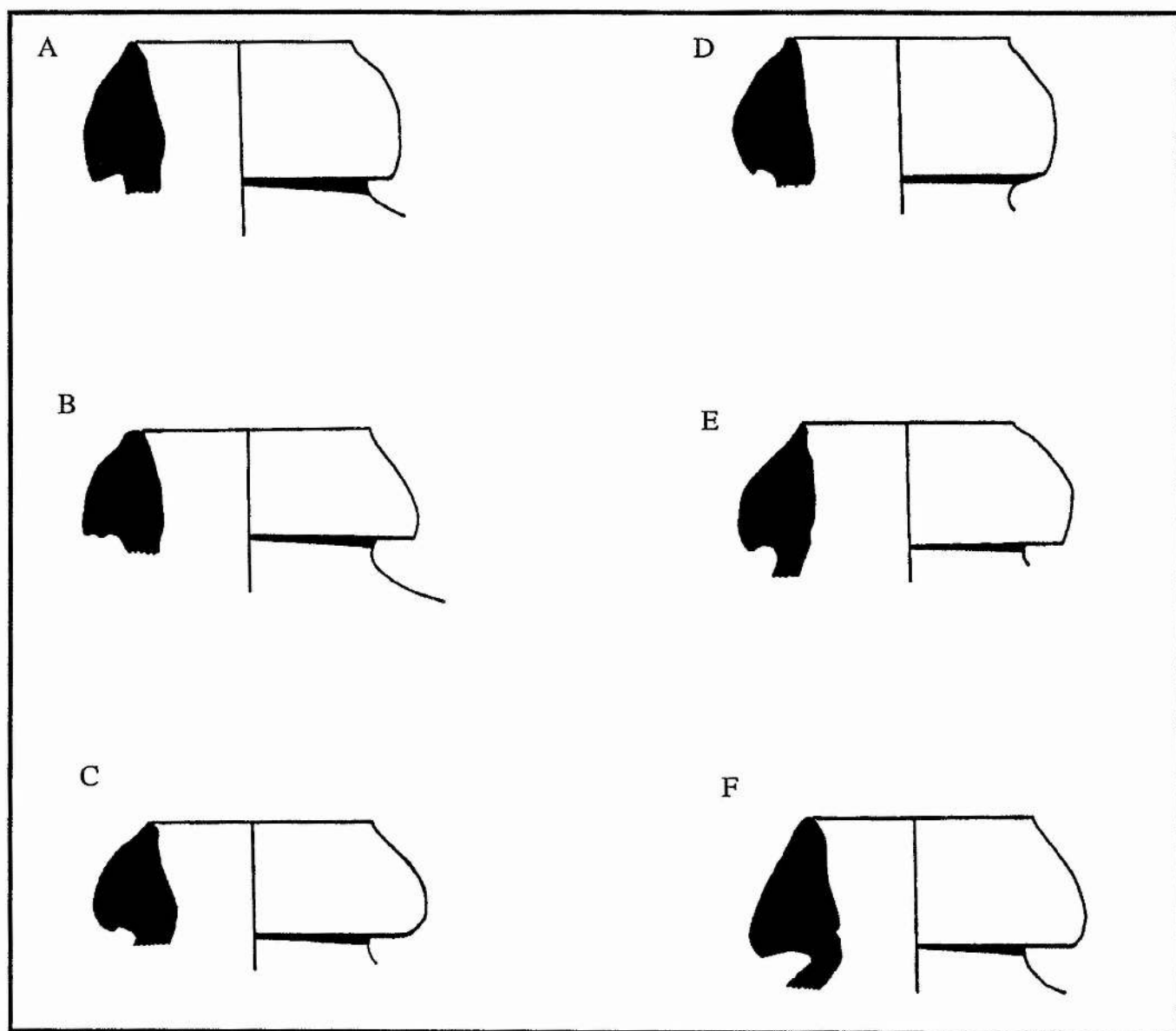


Figure 4.31. Olive jar-type botija rims from 1622.

Fig. 4.31 nos. A - F. **Fig. 4.31 no. A** is a **Type 3** rim with a taller profile, well smoothed joins and a tapered interior. **Fig. 4.31 no. B** is a **Type 3** rim, slightly lopsided with an abraded lip. Join under exterior thickened rim is visible. **Fig. 4.31 no. C** is a **Type 3** rim with a rounder profile, well smoothed interior and a higher degree of detail. **Fig. 4.31 no. D** is a **Type 3** rim with a nearly vertical interior wall. **Fig. 4.31 no. E** is a **Type 3** rim with the upper rim formed into a thinner or sharper lip. **Fig. 4.31 no. F** is a **Type 3** rim with a rounded lip and visible join on the interior wall.

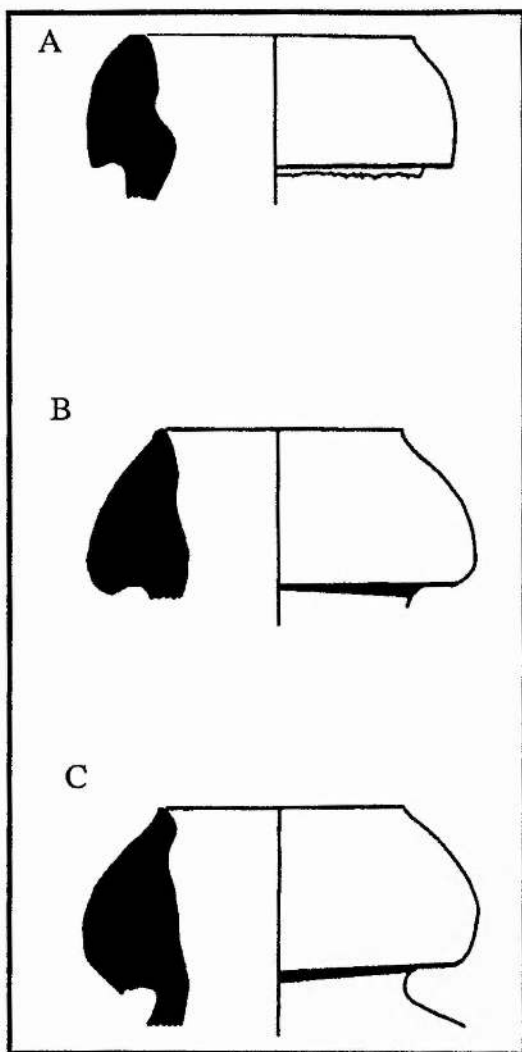


Figure 4.32. Rims from 1622.

Fig. 4.33 no. A is a Type 3 rim with slightly tapering interior wall and well smoothed exterior. **Fig. 4.33 no. B** is a Type 3 rim with sloping interior wall and well smoothed exterior, with one side slightly compressed. **Fig. 4.33 no. C** is a Type 3 rim with slightly tapering interior wall, joins visible with a wider flare.

Fig. 4.32 no. A is a Type 3 rim which has a more rounded appearance and the interior mouth has more of a seat for a cork than a gradual tapering. It is not known whether the method was intentional or a result of a speedy manufacture. **Fig. 4.32 no. B** is a Type 3 rim with a gently sloping interior and well smoothed exterior. This rim could be considered a classic example of the early 17th century Type 3. **Fig. 4.32 no. C** is a Type 3 rim with a near vertical interior wall.

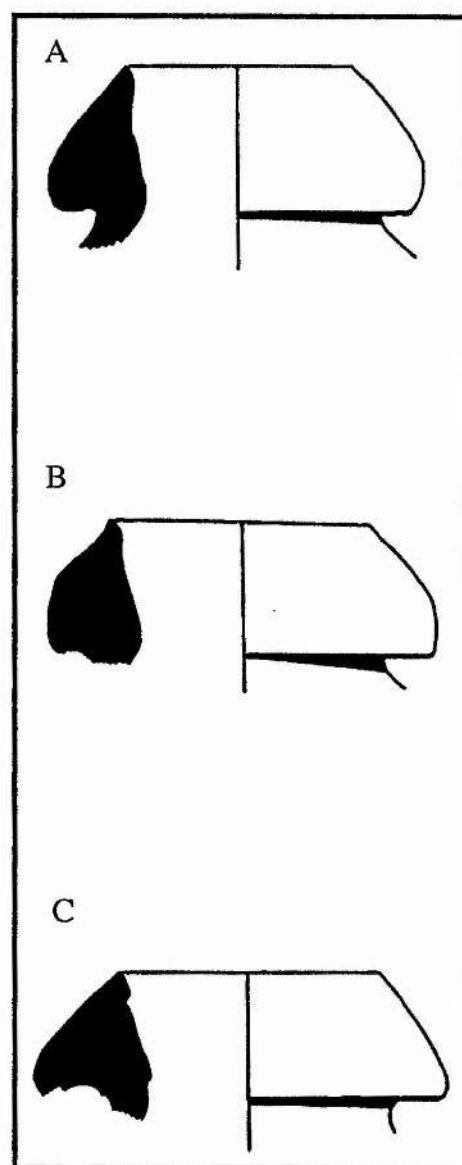


Figure 4.33. Rims from 1622.

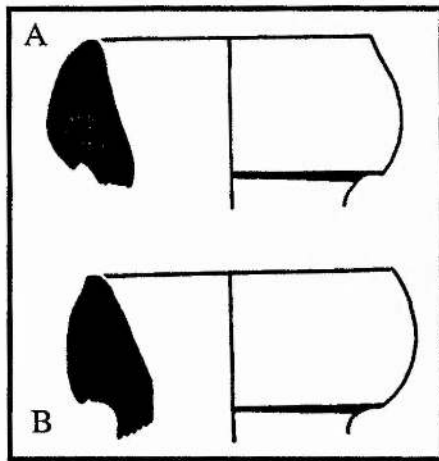


Fig. 4.34. Rims from 1622.

Fig. 4.34 nos. A - B These examples exhibit more of a half-circle form, a rounding of the rim that appears intentional and may be associated with the *1/2 arroba botijas*. **Fig. 4.34 no. A** is a **Type 3** rim with well smoothed interior walls and a semi-circular exterior shape. **Fig. 4.34 no. B** is a **Type 3** rim with well smoothed interior walls with an sharp "V" shape.

RIM MARKS

More complete collections need to be recovered before an accurate percentage of marked to unmarked rims can be determined. Using the finds from the *Atocha* (1622) main wreck deposit a round number of about 10 percent bore markings. Of that percentage about 60% were stamped and 40% were incised (scratched into the clay after it had dried). It is difficult to guess at this point whether the *Atocha* percentage is applicable to other 17th century contexts due to the methods of recovery, the inability to determine the original number of *olive jar-type botijas* shipped, and the actual number of marked rims included in that number.

Some markings appear on more than one shipwreck. A mark almost identical to the double "D" (**Fig.4.35.**) recovered from the *Atocha* was found on the *San Antonio* (1621),

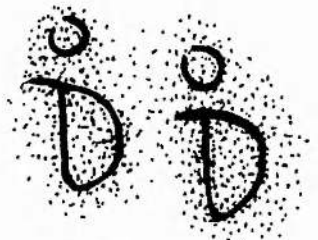


Fig. 4.35. Stamped rim mark. 1622. Scale 1/1.

the *Concepción* (1641) and Goggin (1960:16, Figure 6h) illustrates a "Middle Style" rim mark very similar to the "\$" example found on the *Atocha*; Fig. 4.36.



Fig. 4.36. Stamped rim mark. 1622. Scale 1/1.

Although originally thought to be makers' marks, strong evidence exists suggesting that the jars may have been marked for their intended owners, in connection with their continuous trade with the New World. For

those engaged in ongoing trade with the Indies, ordering personal batches of containers to hold various commodities would make sense.

Nor were such marks confined to the *botijas*. From the site of the *Atocha* (1622) a stamped pottery mark (Fig. 4.37) closely resembles a mark which appears on several of the silver bars found on the same wreck.

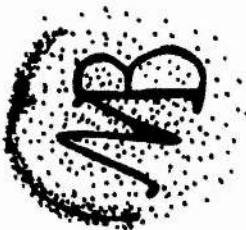


Fig. 4.37. Stamped rim mark. 1622. Scale 1/1.

The mark, a connected initial "MB" (Plate 4.4) (Fig. 4.37), is documentarily attested to represent ownership of the silver bars by Miguel de Munibé. It is reasonable therefore to assume that the *botija* rim that carries the same mark also represents de Munibé's ownership of the jar and its contents (from the *Atocha* manifest transcribed by Eugene Lyon. MS on file). In support of this conclusion are the religious marks "IHS" (Fig. 4.38) found on two other intact *Atocha* rims. Again, supply to a large institution such as the Catholic Church would warrant making reusable jars identified by the owner's mark.

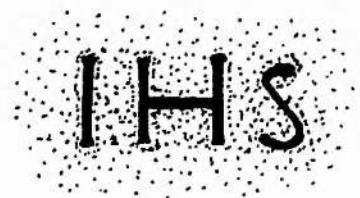


Fig. 4.38. Stamped rim mark. 1622. Scale 1/1.

If indeed the marks denote ownership, it supports the suggestion that the jars were recycled and perhaps used solely as shipping containers. If this is the case, it would also support the hypothesis that the jars were intended for specific contents, shipped in fairly

consistent volumes. The incised marks may also be owner or shipper identification marks although correlation with any manifest has not yet been accomplished.

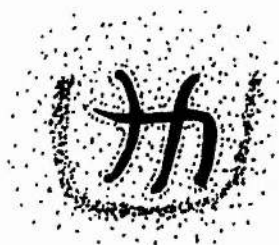


Fig. 4.39. A rim mark with two vertical lines intersected by horizontal "L", stamped twice on the rim.

Fig. 4.39. Stamped rim mark. 1622. Scale 1/1.

Fig. 4.40. A mark stamped twice on the rim, showing a vertical line intersected by two straight short intersects and four curved lines, two intersecting near the middle, and two from the bottom of the central vertical.

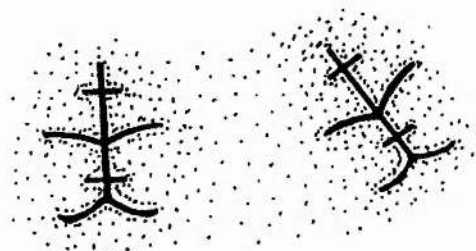


Fig. 4.40. Stamped rim mark. 1622. Scale 1/1.

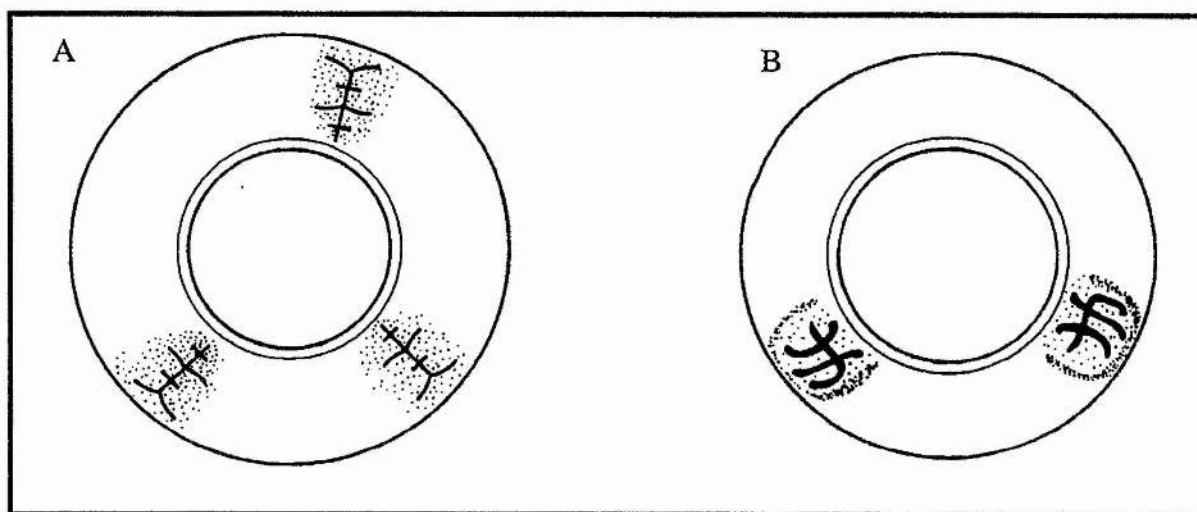


Figure 4.41. Top view of stamped rim marks. No. A is fig. 4.40 and B is fig. 4.39. No scale.

Fig. 4.42. Rim marking of an "S" with a line running through the middle supported by an inverted "U" with a tail. A similar mark is illustrated by Goggin (1969: 16; Fig. 6h).



Fig. 4.42. Stamped rim mark. 1622. Scale 1/1.

Fig. 4.43. A mark depicting a double crossed line supported by a diamond which is supported by two oval diamonds.



Fig. 4.43. Stamped rim mark. 1622. Scale 1/1.

Fig. 4.44. A mark with a "\$" surrounded by a "C" with a triangle "roof" and a diamond supporting the "C".



Fig. 4.44. Stamped rim mark. 1622. Scale 1/1.

Fig. 4.45. This mark, apparently "• P23 •",

(stamped upside-down) is very different

from the others and is found on a rim which

has a dark brick red paste which has been

determined to have come from a different origin (Mitchell, report on file).

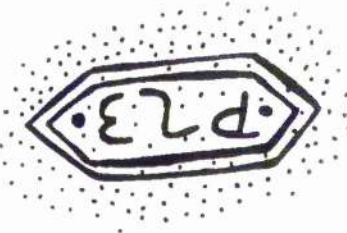


Fig. 4.45. Stamped rim mark. 1622. Scale 1/1.



Plate 4.4. Stamped rim. 1622.

MARKS APPLIED AFTER FIRING (INCISED):

Fig. 4.46. This mark is an incised mark consisting of seven drilled holes forming a wide cross.

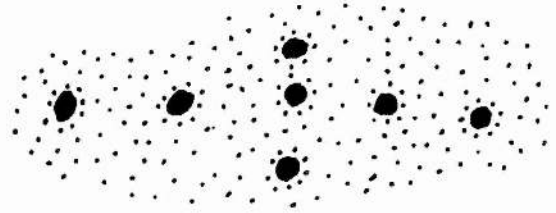


Fig. 4.46. Incised rim mark. 1622. Scale 1/1.

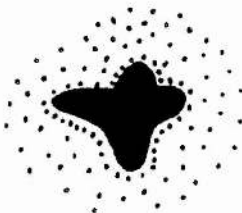


Fig. 4.47. Incised rim mark. 1622. Scale 1/1.

Fig. 4.47. An incised mark of a small cross.

Fig. 4.48. An incised mark of a small cross.

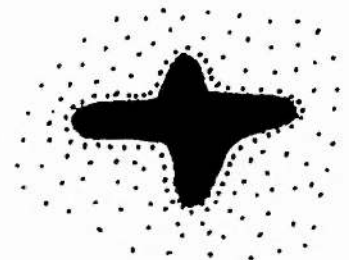


Fig. 4.48. Incised rim mark. 1622. Scale 1/1.

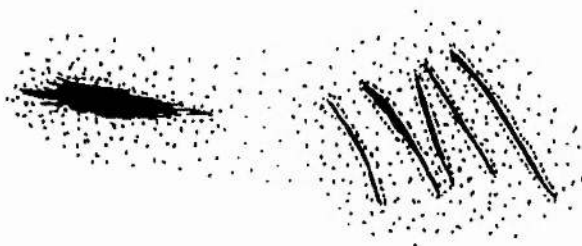


Fig. 4.49. Incised rim mark. 1622. Scale 1/1.

Fig. 4.49. An incised series of marks with a rough horizontal slash to the left of five diagonal cuts.

Fig. 4.50. An incised mark comprised of three diagonal slashes.

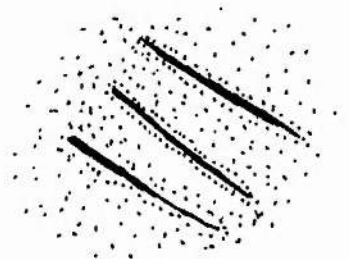


Fig. 4.50. Incised rim mark. 1622. Scale 1/1.

Fig. 4.51. An incised "X".

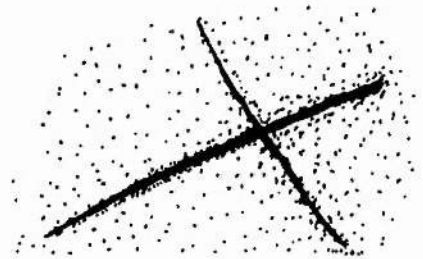


Fig. 4.51. Incised rim mark. 1622. Scale 1/1.

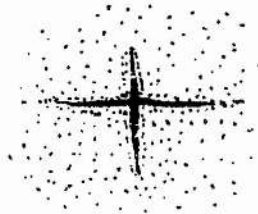


Fig. 4.52. An incised "+".

Fig. 4.52. Incised rim mark. 1622. Scale 1/1.

INCISED SHOULDER MARKS

Another unique characteristic found in the *Atocha* (1622) collection are incised shoulder marks found scratched into the vessel walls. Although scratched markings have been recorded on a ceramic mortar (Chapter 5) from the Spanish Armada (Martin, 1987: pers. comm.), examples outside of the *Atocha* context on the shoulders of *olive jar-type botijas* have yet to be identified. The practice does, however, raise questions as to the evidence indicating that the jars were covered in matting (discussed later). If the jars were "covered to the mouth" then it seems unlikely that the marks were used as identification of contents or owners.

It is important to note that all the recorded shoulder marks were scratched onto the jars after firing. Another possibility is that the shoulder marks which resemble Roman numerals "are tally marks intended to keep a count of completed batches of jars. This would explain why they were scratched on after firing, and it would also mean that the woven matting 'up to the neck' would no longer be a problem" (Martin, 1989: pers. comm.).

Fig. 4.53 looks as though there are two separate owner or shippers' marks engraved on the upper shoulder of the jar. The combination may indicate that the jar was to be shipped from one to the other. The marks depict a five pointed star with a sideways "V" and an arrow passing through the middle of an "X". It may also be a message of some sort, or simply a doodle over a batch mark.

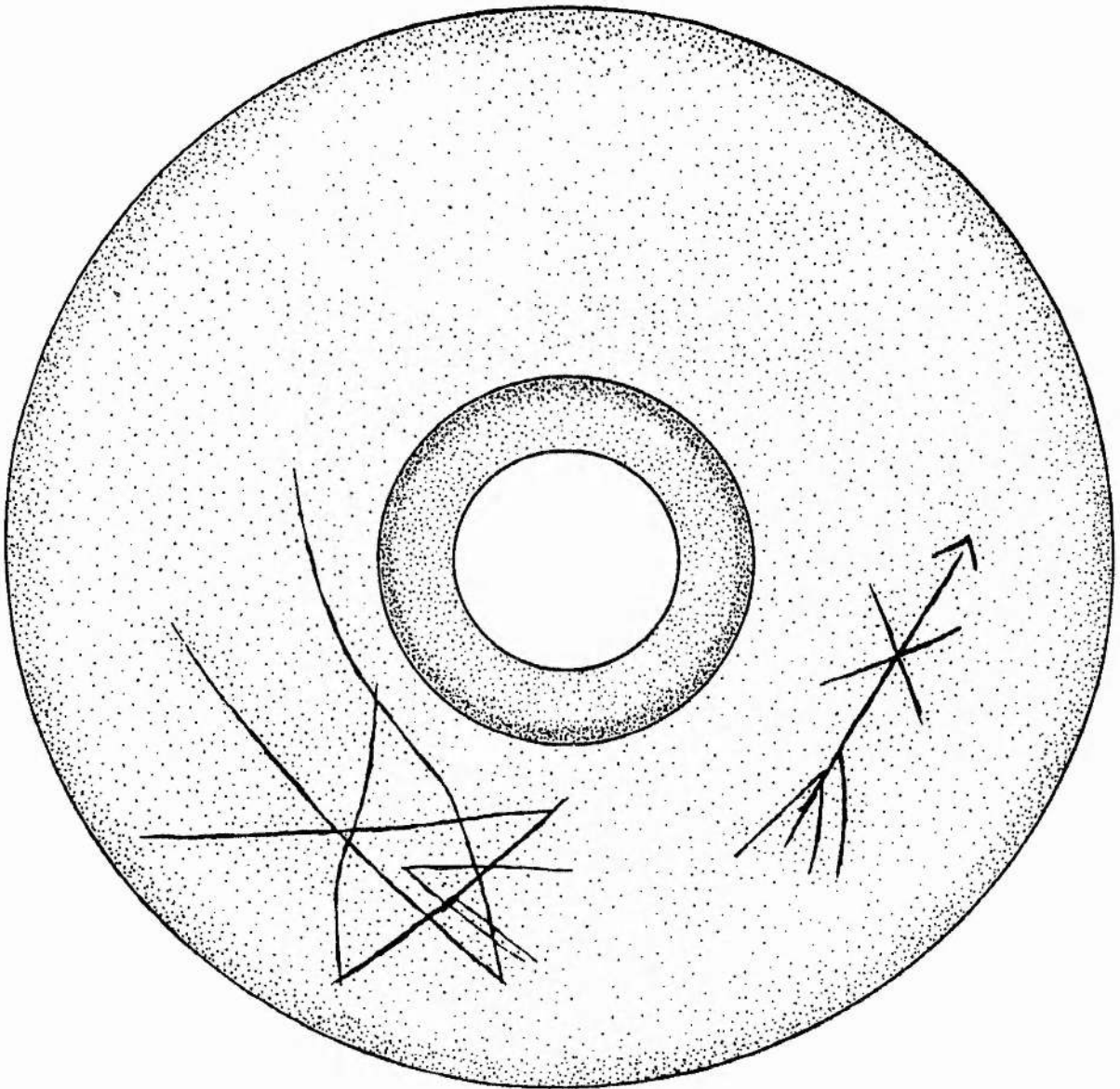


Fig. 4.53. Top view of shoulder marks. 1622. No scale.

Fig. 4.54. Shoulder mark. 1622. Scale 1/1.

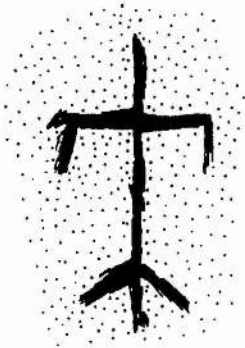


Fig. 4.54. An incised shoulder mark in the form of a cross.

Fig. 4.55. An incised shoulder mark of a Roman numeral "X".

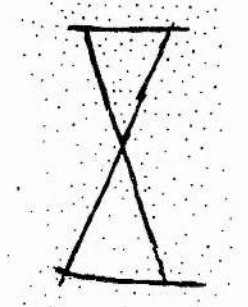


Fig. 4.55. Incised shoulder mark. 1622. Scale 1/1.

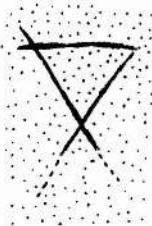


Fig. 4.56. Incised shoulder mark. 1622. Scale 1/1.

Fig. 4.56. An incised shoulder mark of a partial Roman numeral "X".

Fig. 4.57. An incised shoulder mark of an "X".

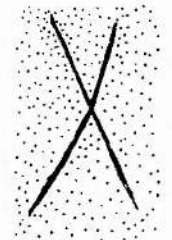


Fig. 4.57. Incised shoulder mark. 1622. Scale 1/1.

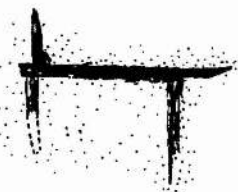


Fig. 4.58. Incised shoulder mark. 1622. Scale 1/1.

Fig. 4.58. An incised shoulder mark of a horizontal line with a vertical slash on the left and a perpendicular slash starting on the horizontal line running down.

FLAT-BOTTOMED OLIVE JAR-TYPE BOTIJAS

Along with the large sample of conventional *botija* material, sherds from large, flat bottomed vessels of coarse red-orange coloured paste, with numerous micaceous inclusions, have been identified on two wrecks and represent a previously unidentified type of *olive jar-type botija*. The paste is very similar to the *botija* fabric although the sherds are in some cases more light tan to orange in colour and of a slightly softer fabric. The recovered examples consist almost entirely of basal pieces, and round "disc" bottoms. Evidence of pitch on the vessel bottoms looks similar to the pitch found in the *botija* sample. These vessels, which all have similar dimensions, appear to be wheel thrown. The thick sides are pulled upwards from a flattened base flaring outward to the shoulder, where they then invert to a rimmed mouth. Coils of extra clay may have been added to increase the height and size of the vessels. The vessel walls approaching the shoulder to the neck are substantially thinner than the lower section and may suggest coils were not added in the procedure as the clay was running out.

While in Bermuda, salvage diver Teddy Tucker reported to me seeing flat-bottomed storage vessels similar to *olive jar-type botijas* although none were available for study. However the large collection of sherds recovered from the *Atocha* (1622), and the reconstruction of one vessel, provide enough evidence to validate his claim. On the basis of numerous intact basal pieces and several intact rim and shoulder sections with **Type 5** rims, it was speculated that the flat bottomed jars represent a previously unidentified part of the *olive jar-type botija* family.

In January 1987, while the *Atocha* collection was being curated for the Florida State Museum, after days had been spent attempting to match a flat bottom with a **Type 5** rim,

lab assistant Arlene Rowoid made a chance crucial link which provided firm evidence that the flat-bottomed wares were indeed associated with the rims and *botija* type containers. A basal section was found to match an inward curving shoulder section that is characteristic of the large collection of wide mouthed rims in the *Atocha* assemblage. To date, however, there has been only one successful reconstruction to aid in the identification of the vessel form.

It was difficult to match the flat bases with the inward curving **Type 5** rims as the typical basal examples exhibit a flaring outwards of the vessel walls (inverted bell shape) with no evidence of a curvature back towards a smaller neck and rim. The overall size of the sherds suggests a vessel probably used for storage, as the presence in the lower hull portion of wreck deposit would indicate. Evidence of similar containers has occurred on land sites (Deagan, 1978: 35; 1987: 36), although the majority have been reported to have been green glazed or dipped in a white slip. There is no evidence of a glaze on any of the *Atocha* flat bottomed utility storage containers. Their presence is so far limited to the early 17th century, with the majority of samples from 1622 and a similar base recovered from the *Santa Ana Maria* wrecked in 1627 off Castletownsend, County Cork, Ireland (Martin, 1989: letter on file).

The absence of intact forms in conjunction with such a large assemblage of sherds may provide a crucial clue in explaining its presence in one small time period. The bases are sturdy with thickened walls with widely spaced throwing marks. As the walls approach the shoulders they become proportionately thinner and the throwing marks become more regular and much closer together. A sherd section from the upper portion of the jars is easily differentiated from the basal portion.

Haste of manufacture and the overall lack of pride taken in the construction of vessels used for storage is well portrayed in **Plate 4.5**. The wet vessel, probably just after throwing, was pushed from the wheel head by the potter's hand as the print clearly indicates.



Plate 4.5. 1622. Potter's handprint on a flat-bottomed jar.

Fig. 4.59. Scale 1/2. A reconstructed flat bottomed *botija*. This reconstructed vessel was comprised of four basal sherds that proved this type of jar had rounded shoulders tapering to a small mouth. The line on the upper left shoulder shows where rim (Fig.4.62) was added to complete the postulated shape. The vessel walls are fairly thick towards the base with turning marks wide and less defined. Approaching the shoulder, the walls become much thinner and the throwing marks are more pronounced and much closer together. The potter may have constructed the base crudely with his fingers pulling the clay quickly upwards. As the clay thinned he may have added a coil of clay and used a tool instead

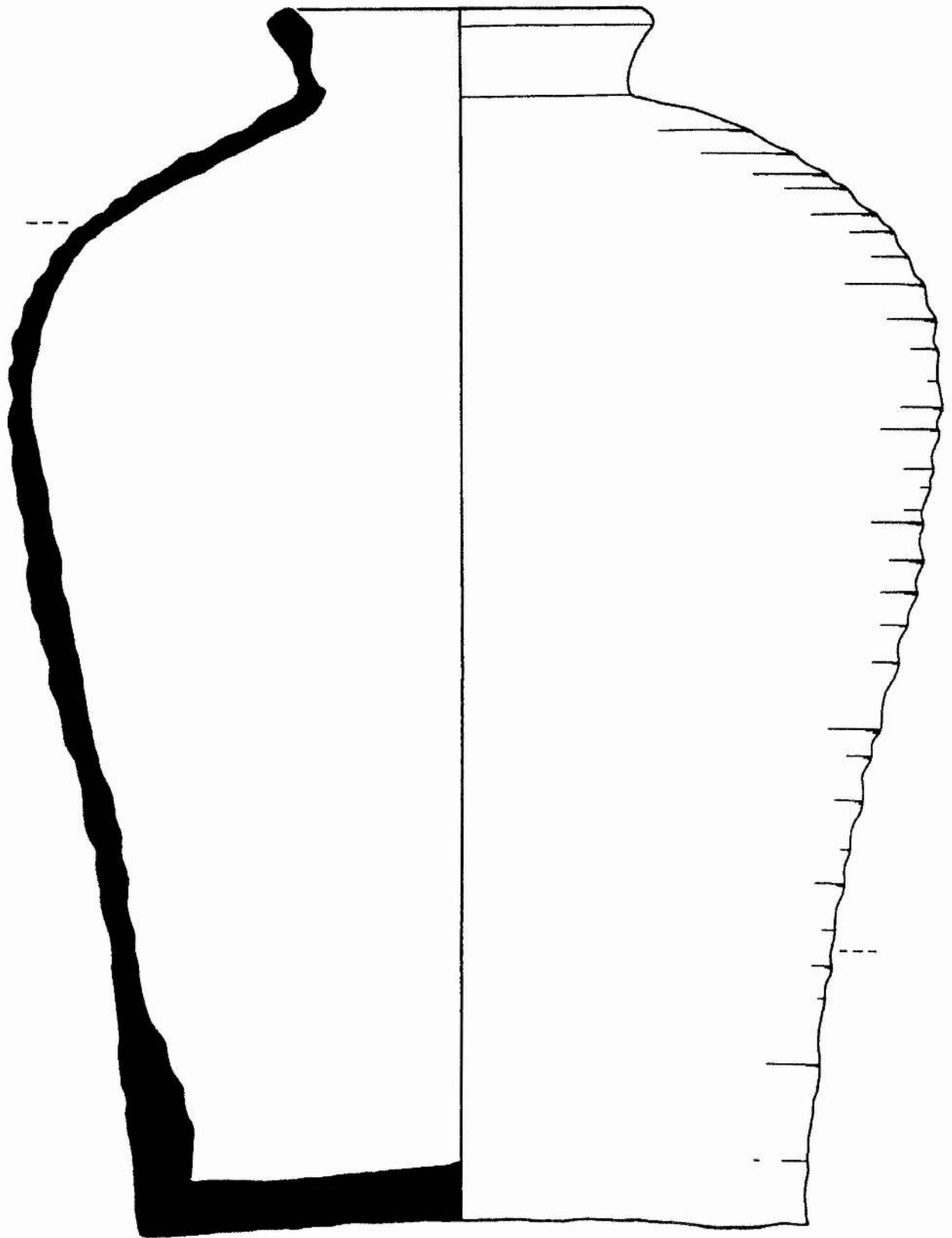


Figure 4.59. Flat-bottomed botija. 1622.

of his fingers to form the narrow gap between the upper throwing marks on the exterior. The interior walls are smooth and may have been supported with the potter's hand. There are no join marks in the shoulder area indicating that the jars were formed in two pieces. Nearing the neck the exterior is smoothed where it meets the wide mouthed rim which is fashioned for a cork closure. Pitch residue on many of the rim samples indicate a sealing technique similar to that of the common *botija* forms.

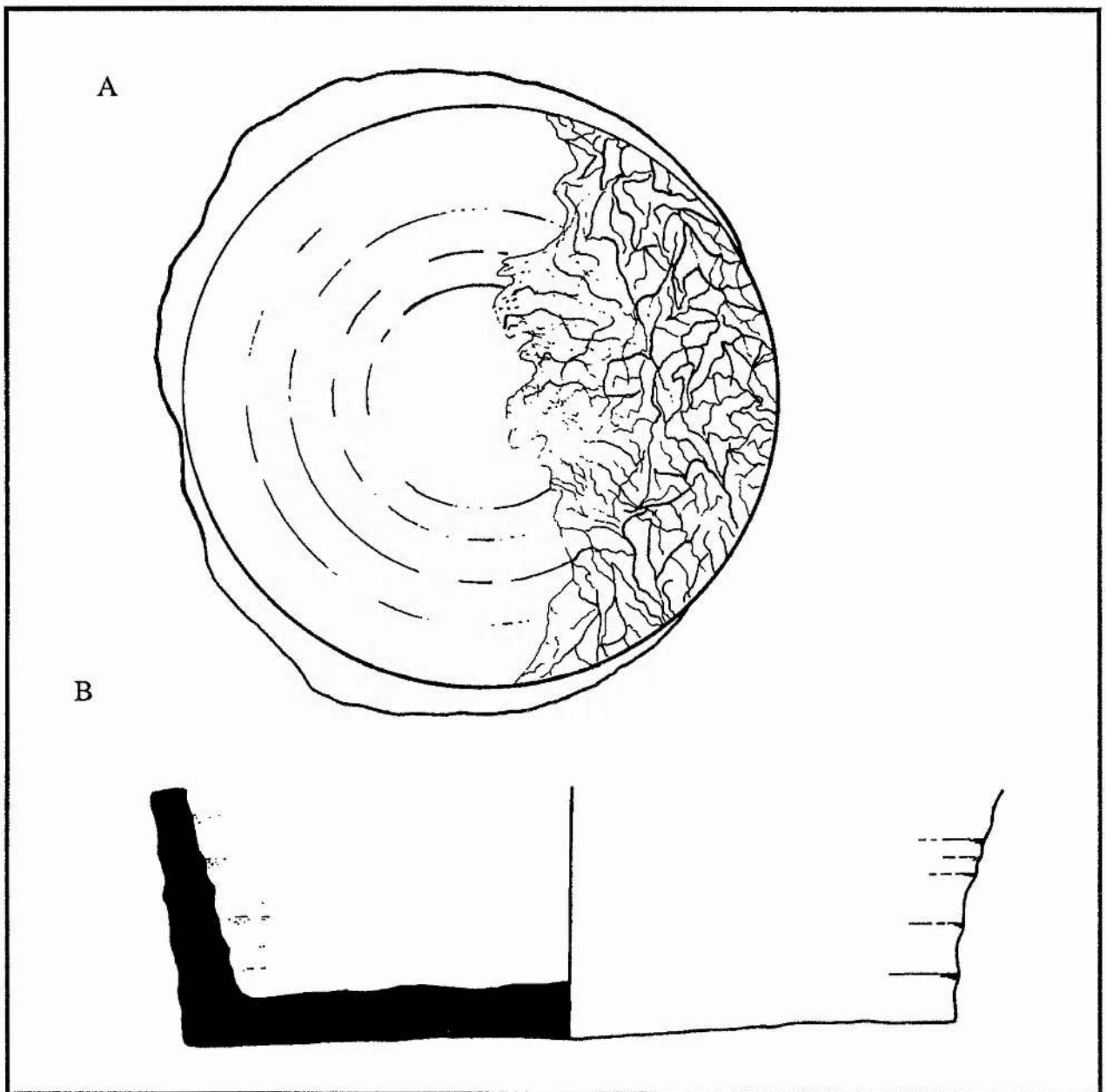


Figure 4.60. Flat-bottomed bases.

There were no intact vessels recovered from the *Atocha* (1622) wreck and the large scatter area of wreck materials made additional positive reconstructions impossible. The fragile nature of the shoulders and rim sections of the jars may explain why there were no intact vessels recovered, and may also explain why jars of this type have not been recovered from wrecks of other periods. If the jars proved too fragile for shipboard use then it would make sense that their use was confined to a short experimental period.

Paste on all the flat-bottomed jars is similar to the *botija* fabric with in some cases a "white slip" appearance. They appear tempered with fine sandy particles with medium sized inclusions throughout.

Fig. 4.60. No. A. A basal disc covered in a thick coat of pitch residue. Paste is a tannish-pink tempered with sandy particles and mineral inclusions. **Fig. 4.60. No. B** Similar basal sherds as above comprised of two reconstructed pieces. Maximum base exterior is 22.5 cm with wall thickness ranging from 1- 1.3 cm. Paste is a light grey cored fabric with visible mineral inclusions. A white slip appearance over terra-cotta paste.

Fig. 4.61. No. A Similar base as above comprised of two sherds. Maximum exterior diameter is 22 cm. Very crude construction with large bubbles in paste indicating poor clay preparation. A fresh break reveals a reddish-brown cored fabric framed by a greyish to black core with a tarnished pink exterior. Paste is tempered with fine sandy particles with large gritty inclusions. This sample clearly exhibits the haste of production with one side pushed inwards by a board 12.4 cm wide slipped under the vessel in order to pry the still pliable clay from the wheel. **Fig. 4.61. No. B** Similar base as above with a slightly more distinctive outwards flaring. Smaller turning marks are more defined on interior vessel walls. Droppings of clay are present on the base. The join between the flattened

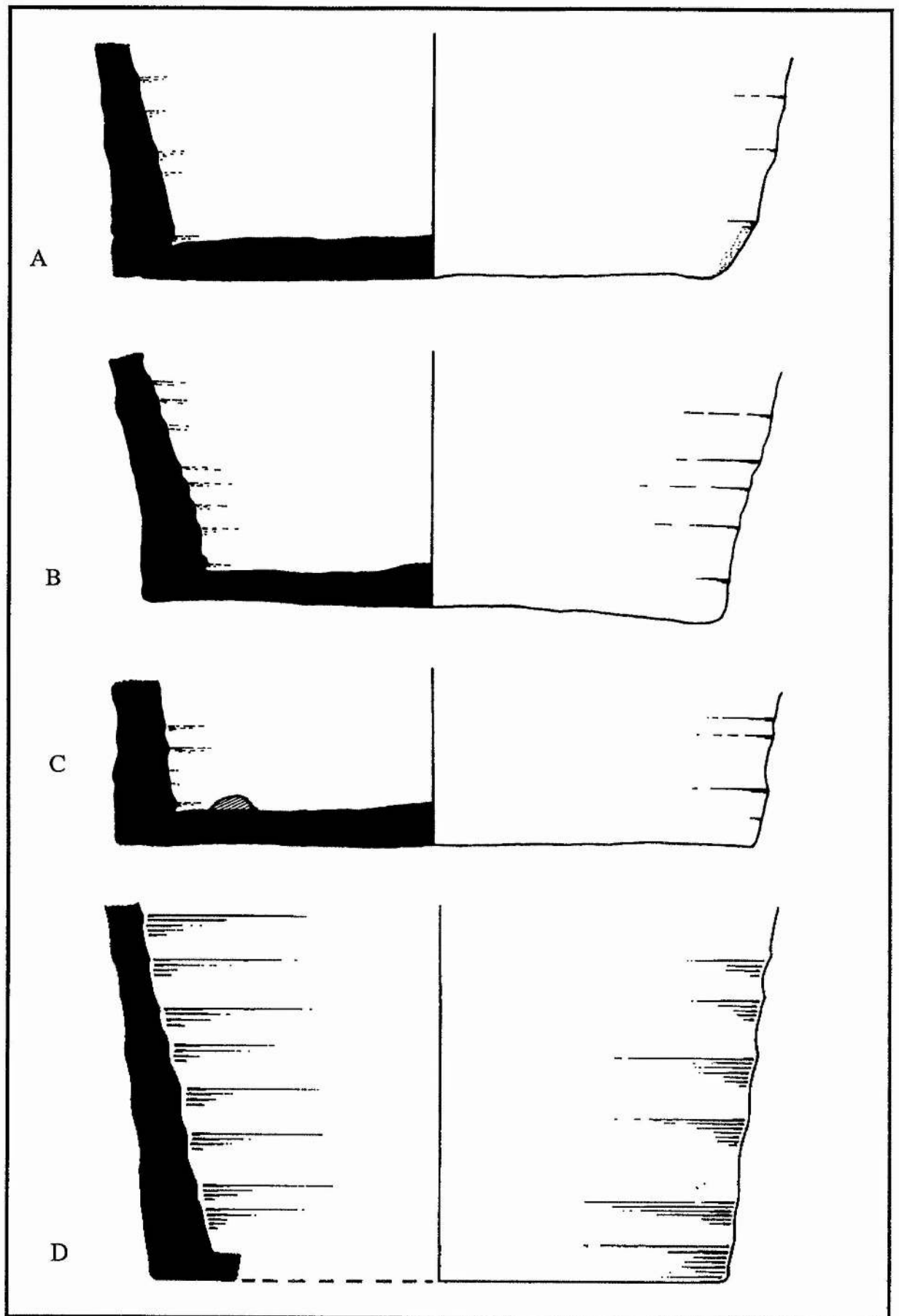


Figure 4.61. Nos. A - D. (D after Martin.) Flat bottomed bases. 1622.

base and vessel walls is clearly visible. A brownish stain covers some of the interior of the vessel. Paste is a darker brown than the others on the exterior with a light grey core and large mineral inclusions. **Fig. 4.61. No. C.** Similar base as above with pitch resin on interior bottom of jar and running down the sides. Maximum diameter of exterior base measures 21.7cm. Base thickness is 1.2 cm. Walls range between 1.2 and 1.6 cm. Clay droppings are found on the interior floor possibly from trimming the finished rim. Paste is a light grey cored fabric with a buffish pink to orange exterior. Some areas have a white slip appearance. **Fig. 4.61. No. D.** (after Martin) An example from the *Santa Ana Maria* wrecked in 1627, five years after that of the *Atocha*(1622) exhibits similar characteristics as the sample from 1622. The paste is described as "light red earthenware, no slip, typical olive-jar fabric" (Martin; 1990, letter on file). The addition of this example in such close temporal proximity to the 1622 collection further supports their use in a narrow time frame: the early 17th century.

Fig. 4.62. An intact rim and shoulder from a **Type 5** jar comprised of 7 sherds. It was hoped that careful excavation would uncover the basal components, however none were discovered. **Plate 4.11** shows the jar in situ on the site of the *Atocha*. The wood chock laying next to the rim may have been used to wedge securely the vessel in the hold as reported in the *Tolosá* and *Guadalupe* wrecks (James: 1985). The rim has pitch residue

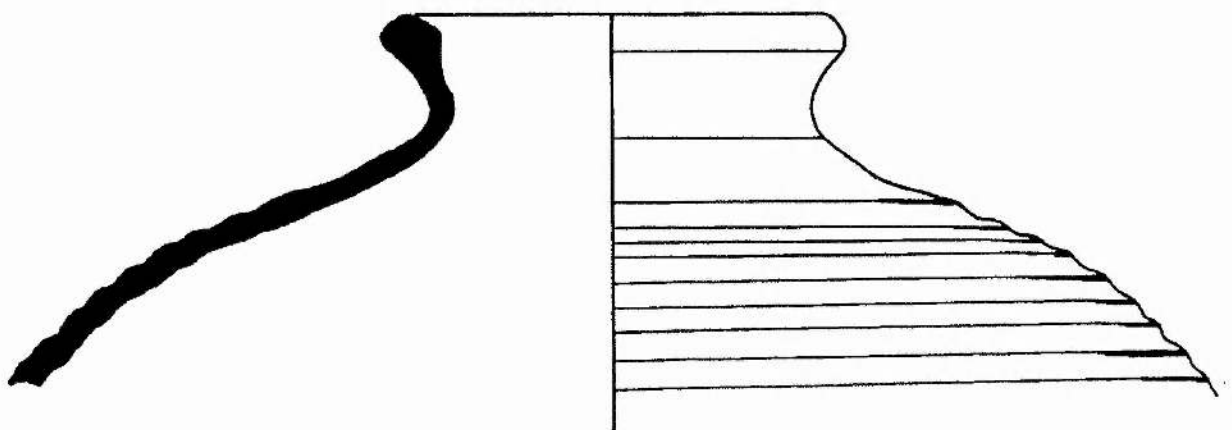


Fig. 4.62. 1622 Rim and shoulders of a flat-bottomed botija.

on the interior . The rims on all these vessels appear to have been pulled directly from the shoulders. The paste has numerous inclusions, tempered with small mineral particles, with a tannish-white exterior colouration.

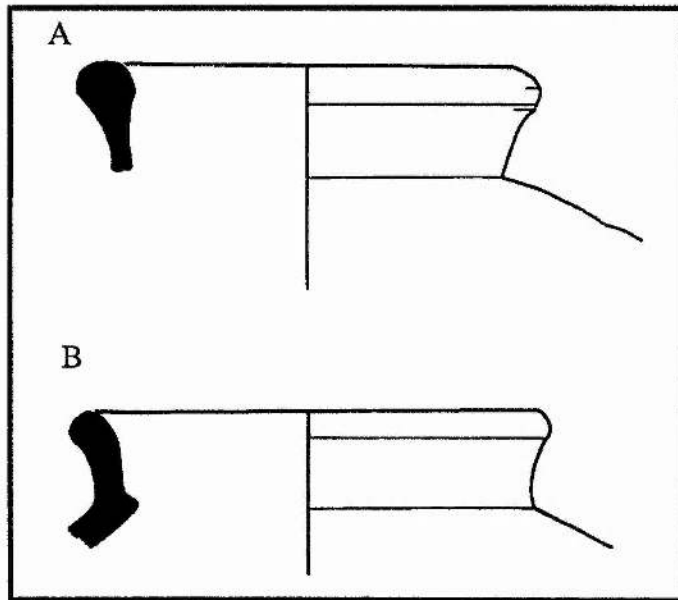


Fig.4.63. Flat-bottomed rims. 1622.

Fig. 4.63. No. A. Rim section similar to above although shaping of interior lip is less defined and slightly cruder with less of interior lip for a cork. The almost vertical slope (as opposed to a steep interior angle) may be exaggerated due to inexact reconstruction of the rim. **Fig. 4.63. No. B** One half of a rim similar to the above. Pitch residue is visible on interior. Paste is a tannish cream with fine mineral inclusions.

Fig. 4.64. Similar to the above this example has a pitch residue on the interior and visible rim to neck join marks. Turning marks are visible on the interior while the exterior is well smoothed. Paste is a creamy tan with mineral inclusions, tempered with fine sandy particles.

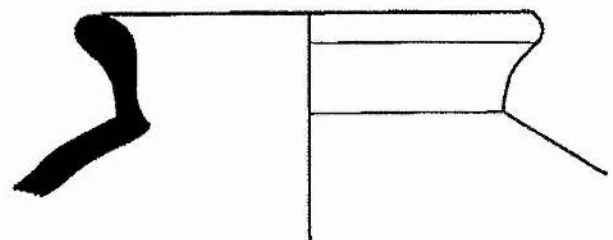


Fig.4.64. Flat-bottomed rim. 1622.

Fig. 4.65. No. A. The neck and shoulder sherd of a vessel of similar paste to the wide mouthed *botijas*. The base of a handle is attached to the exterior vessel wall. Turning

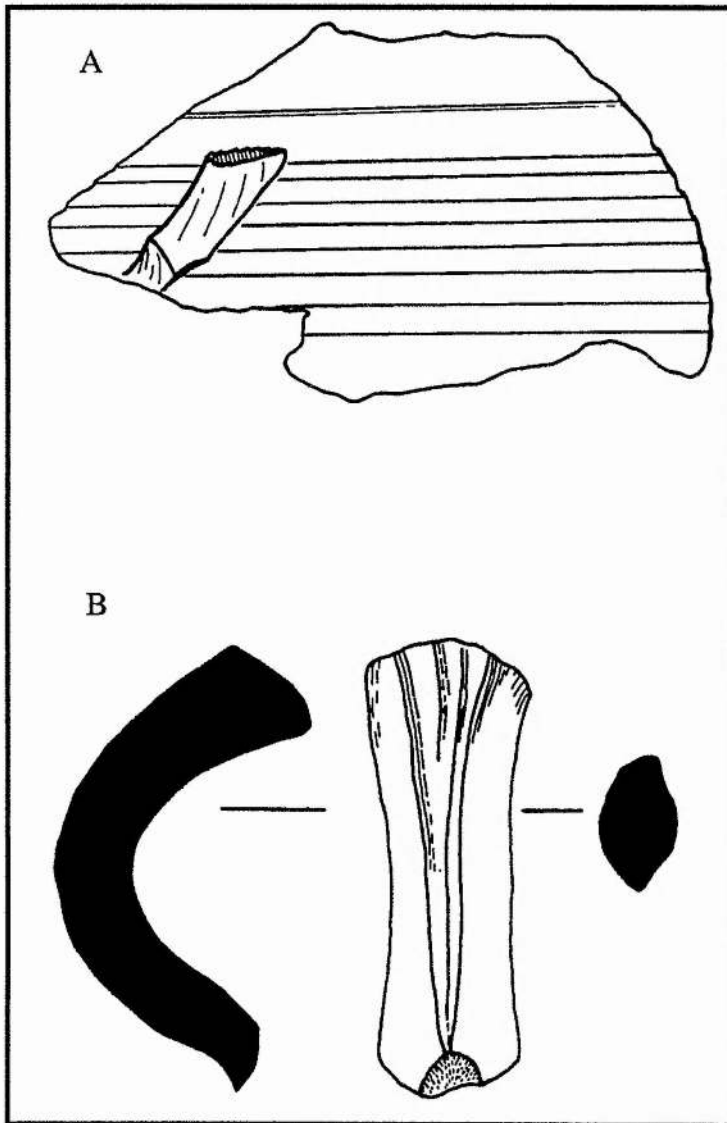


Fig. 4.65. Botijas with handles. 1622.

marks end at the shoulder as the neck area is well smoothed. An incised line encircles the sherd which appears to be a stylistic feature and not a join mark. The paste colour on the exterior of the vessel has a white slip-like appearance over a tannish to brick paste. The interior fabric colour is more reddish without the white-slip-like coating. The composition of the paste seems more dense than similar fabrics and exhibits similar fine mica-like inclusions. It is presumed that the handle extended towards the top of the vessel and was attached to or just below the rim to facilitate pouring the contents.

Fig. 4.65. No. B. A handle of *botija* type paste with an orange-tan fabric covered by a white-slip-like coating. This sherd may have been attached to a more vertically walled vessel than the sample at-

tached to the shoulder due to the angles of its two ends. If the thinner half was facing towards the base, it would then appear that the thicker upper half was either attached to the rim an outwards flaring neck. The handle appears to have separated from where it was joined to the vessel.

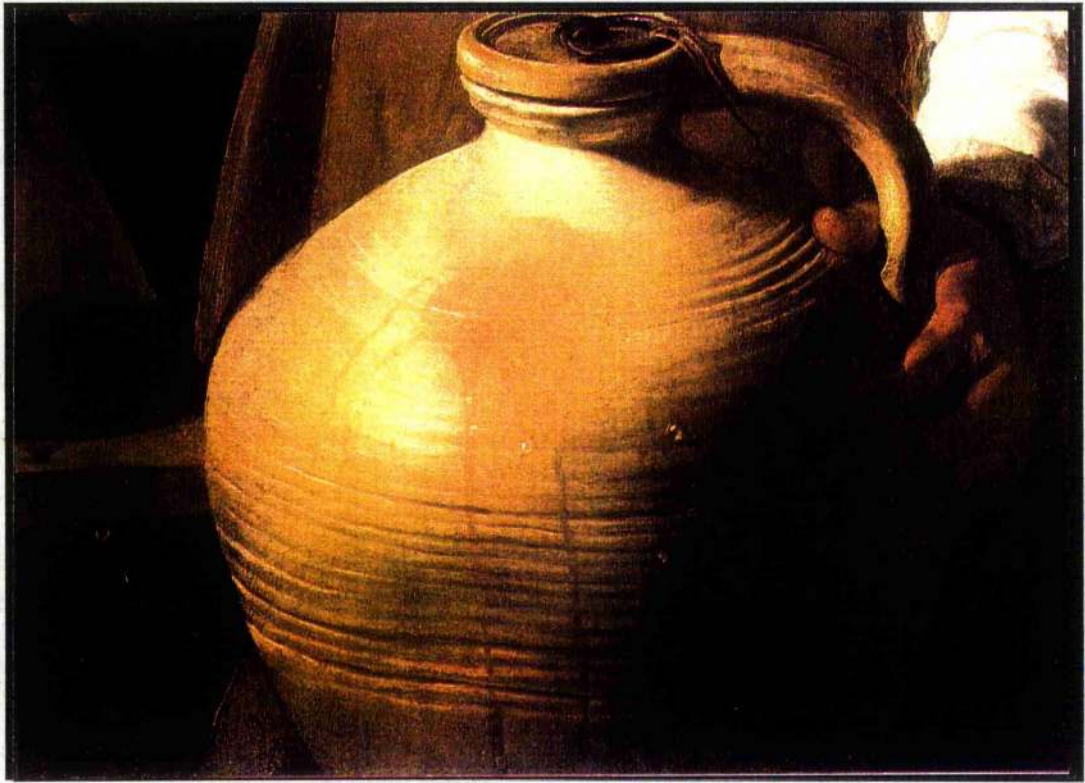


Plate 4.6. *The Waterseller*. Velázquez (1623), (detail from Brown, 1986).

The two previous figures were the only examples of the flat-bottomed jars recovered from the *Atocha* (1622) with handles. It is possible that the complete jars were similar to a vessel depicted in a painting by Velázquez entitled *Waterseller* (of Seville) (detail **Plate 4.6**) given to Juan de Fonseca y Figueroa by the artist in 1623 (Brown, 1986:12). The jar has one handle and is presumably sitting on its own flattened base, although the bottom is not shown in the painting. There is not an incised line running around the upper shoulder although the throwing marks end just past the base of the handle. The neck and top shoulders are well smoothed moving towards the rim. The rim itself is similar to all the wide mouthed **Type 5** rims in the *Atocha* assemblage. The painting also shows a type of closure that fits into the top of the attached handle by a small cord.

MIDDLE 17TH CENTURY BOTIJAS

A later wreck, that of the *Concepción* ((1641), also revealed an assemblage of *olive jar-type botijas*. Four examples were recorded for this study. They generally resemble the jars recovered from the two wrecks of 20 years earlier with the exception of the absence of the small conical *botijas*. It is not known if any were recovered and simply not in the collection at the time of the study, although there were no sherds or partial sherds to suggest their presence.

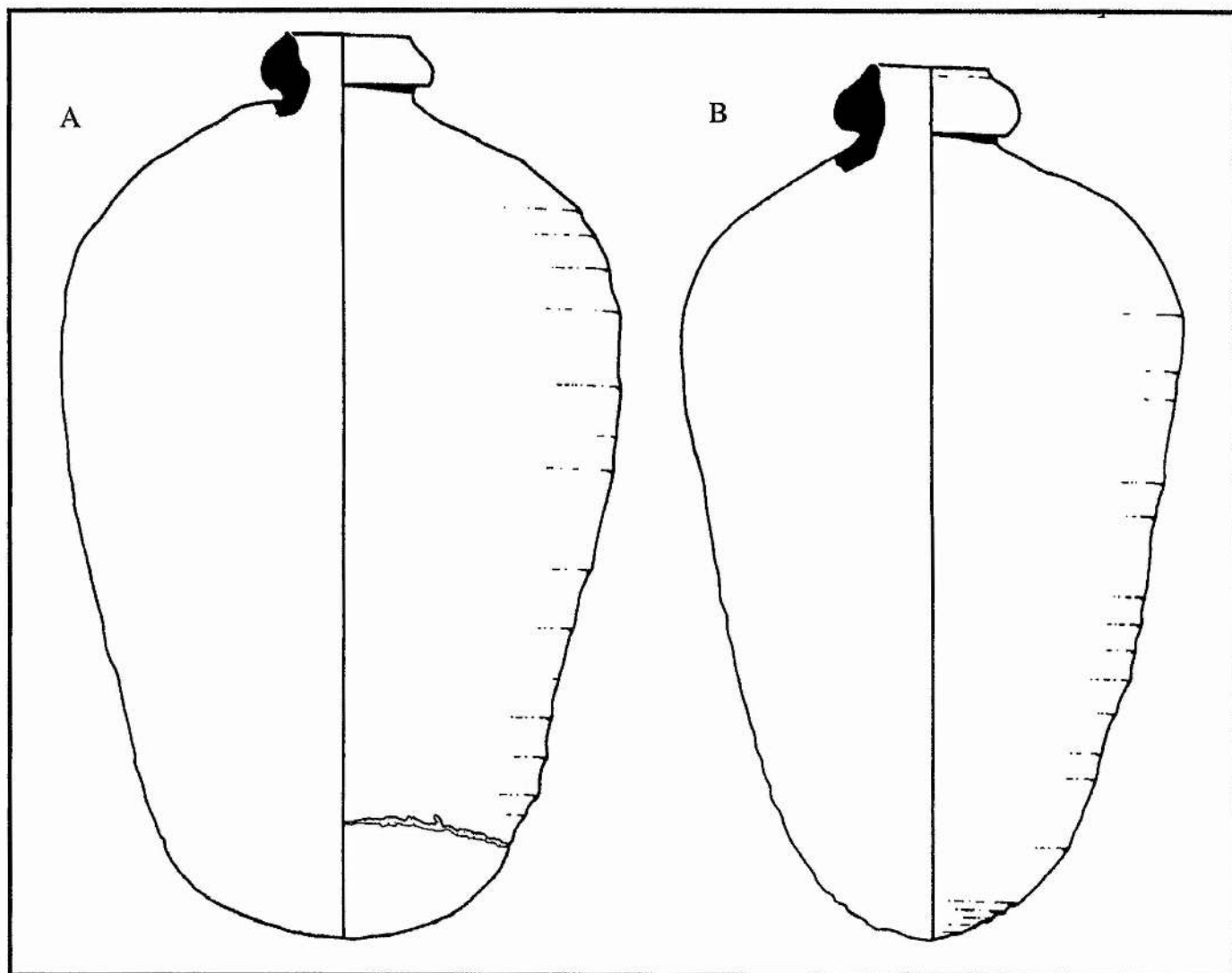


Fig. 4.66. Botijas peruleras. 1641.

Fig. 4.66. No. A. The first and larger of the two *botija peruleras* is a crudely fashioned jar covered in a slight concretion. The exterior is very smooth with few turning marks visible except near the base. A heavy scar around the base is sloppy and unsmoothed. The jar feels heavier and harder than most and the fabric seems denser without the remains of a glaze, although the inside has typical residue of pitch running up the sides. The paste is a darker brown with visible gritty inclusions tempered with large sandy particles. Capacity is 21.4 litres. **Fig. 4.66. No. B.** The second **Type A** olive jar has a rim marking illustrated in **Fig. 4.67** of a triangle connected to a diamond crossed supporting a small diamond at the top connected to an "R". There is pitch residue on the interior on one side. A small incised line near neck may be evidence of join, or a poor addition of a coil. The paste is tan to reddish-brown.



Fig. 4.67.

Fig. 4.68. No. A. Of the two **Type B** jars recorded, the first is a small jar with a sharper shoulder angle than others. The exterior is stained with a myriad

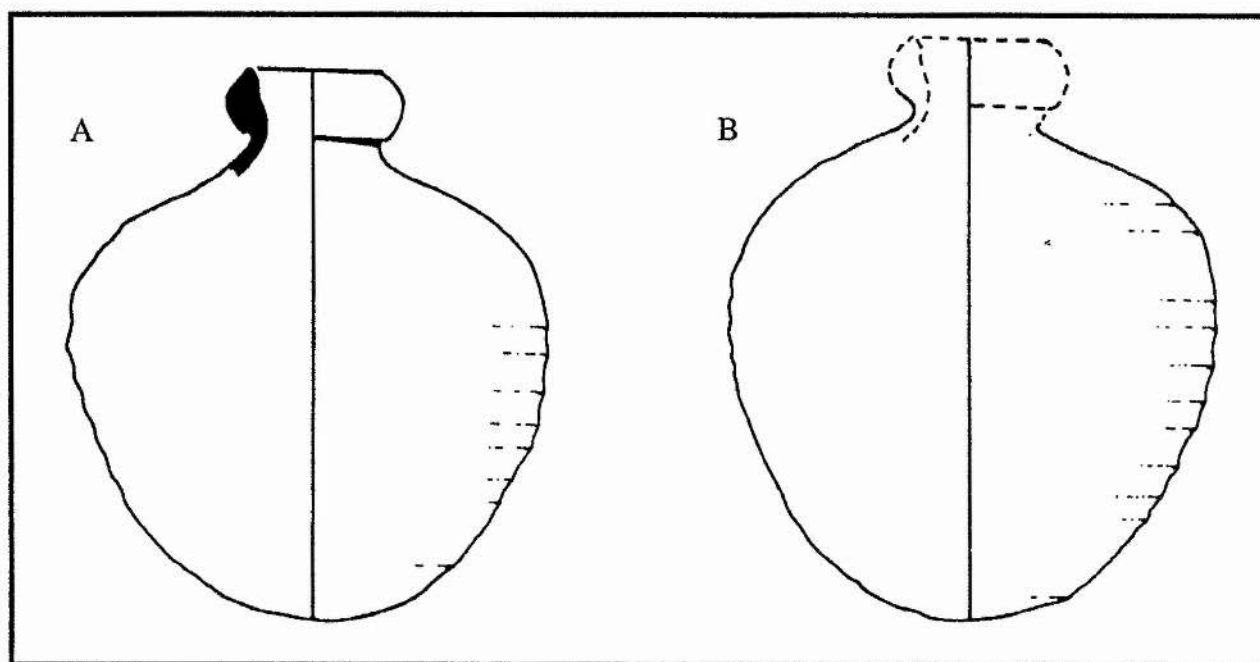


Fig. 4.68. 1/2 arroba botijas. 1641.

of colours. With some concretion on the exterior it is difficult to ascertain if it definitively was not glazed although there is no visible evidence. The bottom of the jar is rough, as if it were scraped accidentally when wet, with small scrapes near the base and side looking as if it was laid on grass or straw to dry. The paste is multi-coloured due to concretions, although it has typical tempering with fine sandy particles. Capacity is 5.46 litres.

Fig. 4.68. No. B The second **Type B** *botija* has a white slip exterior appearance with the neck missing. There are finger marks visible on the exterior and interior with some pitch or mud evidenced on the bottom interior, possibly from a post-wreck deposit. There is again no evidence of any glazing and the paste is a pinkish-buff fabric with a grey core and numerous inclusions tempered with large gritty particles. Capacity is 6.14 litres.

RIM MARKINGS (1641)

Rim markings also occur in the collection on **Type 3** rims similar to those of earlier wrecks in the century. **Fig. 4.69.** shows a stamped rim mark of a “B” on its side with its leg extended and an additional leg extending from the lower half circle.

Fig. 4.69. Rim mark. 1641.

Fig.4.70. This mark depicts a stamped rim mark similar to two other double “D” or “DD” marks found on two earlier wrecks.

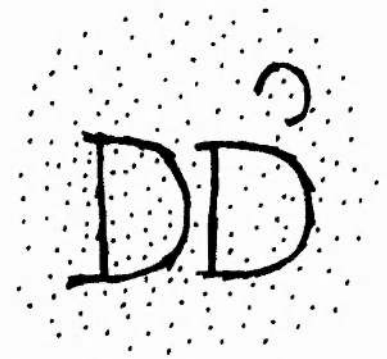


Fig. 4.70. Rim mark. 1641.

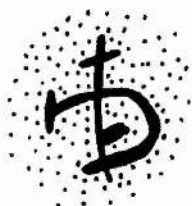


Fig. 4.71.
Rim mark. 1641.

Fig. 4.71 shows a stamped rim mark of a cross and a backwards "C" at the bottom.

Figs. 4.72 - 4.74 all show stamped rim marks with variations of the letter "A" with the first and third bearing two curved "horns" reaching from the top.

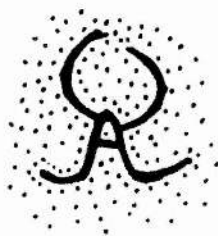


Fig. 4.72.
Rim mark. 1641.

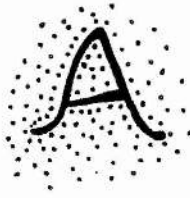


Fig. 4.73.
Rim mark. 1641.

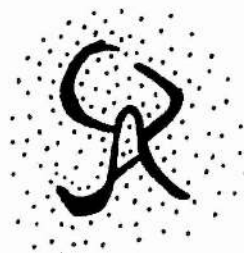


Fig. 4.74.
Rim mark. 1641.

The marks from the *Concepción* (1641) are the latest recorded by this researcher and may imply that the practice became less frequent after the middle of the 17th century. Due to the lack of available material between the 1641 date of the *Concepción*, and the assemblages from the Portuguese wreck in Mombasa (1697) and the jars recovered from the Barbuda wreck thought to date to 1695, it is not yet certain when the practice of rim markings came to an end. Because of the total absence of marks from wrecks recovered in the first part of the 18th century, it appears to be a characteristic limited to the 17th century only found on **Type 3** rims with a semi-triangular shape, and associated with the **Type A** *botijas peruleras*.

LATE 17TH CENTURY JARS

Represented by relatively few examples, the latter part of the 17th century needs further examination. One notable wreck from the period is that of the Portuguese wreck at Mombasa, thought to be the *Santo António de Tanná*, built at Bassein near Bombay in 1680-81 and lost in front of Fort Jesus, Mombasa in 1697 (Sassoon, 1981). The wreck yielded five whole jars and seven rims with whole jar heights ranging from 23.9 cm to 26.9 cm and diameters from 19 cm to 20.3 cm (ibid.). The average capacities of the jars were recorded at about 4 litres, with the jars all exhibiting a brick red, homogeneous, soft and easily abraded paste usually about .7 cm thick, covered with an opaque, greenish yellow glaze on the interior with splashes on the exterior (ibid.). These paste and glaze characteristics appear to be indicative of Portuguese manufacture and discussed in Chapter 6.

The jars are described as nearest in form to Goggin's Middle Style B (Goggin, 1960:14) although the Mombasa jars are smaller in size and mouth diameters, from 5 to 6.6 cm external

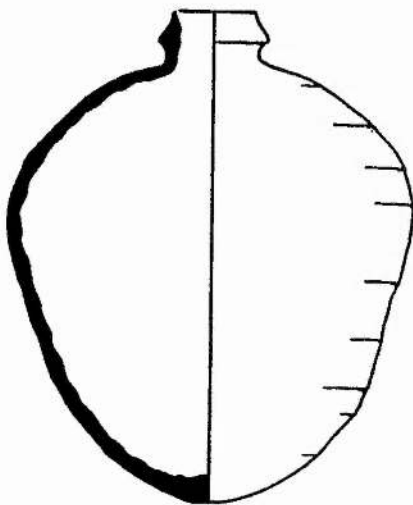


Fig. 4.75. Portuguese botija from 1697. (after Sassoon).

and 2.8 to 3.6 cm internal, with the addition of one rim example with a "convex" outer lip (Sassoon, report on file). It was concluded that the jars were similar enough to suggest a new class separate from Goggin's typology, probably manufactured in Portugal, possibly explaining some of their unique characteristics.

Inclusion of these finds is important because of their similar shape and non-Spanish origin. Examining differing characteristics can aid in identifying jars with different proveniences. **Fig. 4.75** (after Sassoon, ibid.; Fig. 16 MH 159) exhibits a **Type 3** rim with a semi-triangular

shape sloping at a sharp angle. The shoulders are gradually sloped, with throwing marks visible on the interior and exterior. The description of a brick red paste and yellow glaze differs from jars of Andalusian origin. Volumes of the jars are substantially less than those associated with Spanish origins and may be intended to hold different measures.

Another wreck off the Caribbean island of Barbuda yielded jars thought to date to the late 17th century. Although the four jars recorded for this study are presumed to date to 1695, their exact origins are not conclusive. The dating is based on a written account of a Spanish wreck off the island of Barbuda in 1695 (on file) describing the location of the wreck which coincides closely

with the location of the artifact assemblage recovered. Other items thought to date to the late 17th century were recovered with the jars although no structural remains were found. Caution should be used at this point in assigning a concrete date of 1695 to the assemblage, although there is also no evidence that suggests an alternative date or origin.

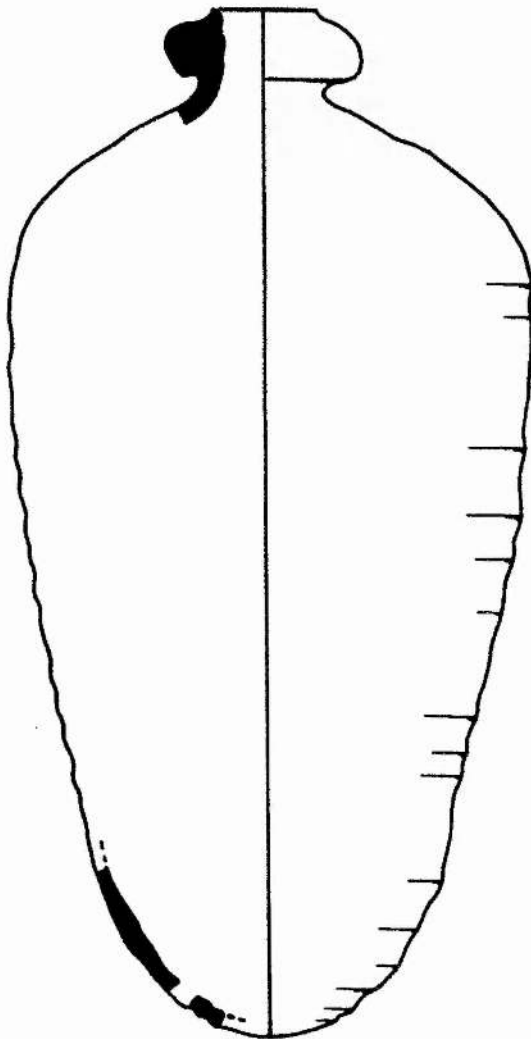


Fig. 4.76 Type A jar, 1695.

Four whole jars and two rims were recorded in Key West Florida in 1990 with the help of Jim Sinclair. The jars represented approximately half of the total recovered. The remaining jars were not available for study. Upon preliminary inspection, the rims of the **Type A** jars appeared to share manufacturing techniques of both **Type 3** and **Type 4** rim styles. It was determined that the rims

had been made using the **Type 3** process while the potter smoothed the top of the thickened rim as he formed a pronounced lip. The general shape of the rims is more semi-circular with a pronounced lip although some incorporate the semi-triangular tear-drop shape found on earlier jar rims. The interior rims are shaped for insertion of a cork of which four were included as part of the recovered material.

The paste of the jars is tannish-brown with fine mineral inclusions. Fresh breaks from the recent removal of iron concretions reveal a grey core. Glaze is not evident on any of the jars recorded. **Fig. 4.76** shows a **Type A** jar whose rim and shoulder were concreted. The jar is tapered with sloping shoulders. Throwing marks are evident on the exterior although the exterior

may have been smoothed slightly or surf worn. A small hole near the base revealed wall thickness and throwing marks on the interior base. Volume measures 13.7 litres.

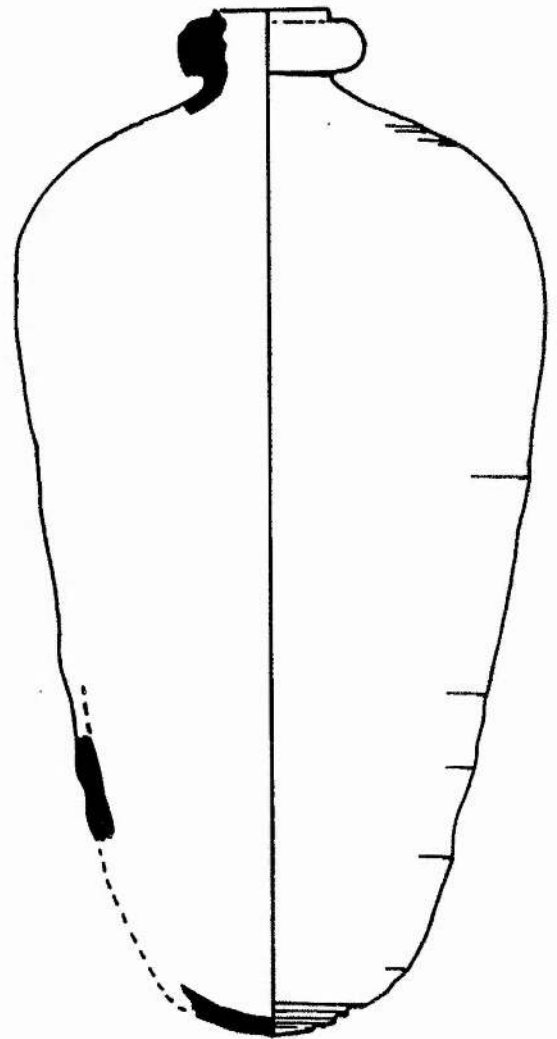


Fig. 4.77. Type A jar, 1695.

Fig. 4.77 is a **Type A** jar similar to the above. The rim shows the exaggerated lip with one side having a more semi-circular form. The interior rim has a slight groove which appears unintentional and left unsmoothed. There are two incised grooves on the upper shoulder which also appear unintentional, running only partly around the jar. They may have been caused by a large inclusion or a sloppily attached coil. A scar of excess clay thought to be caused by a chuck (not illustrated) runs 6.5 cm from the base for 10 cm. A hole caused by the removal of an iron

concretion revealed the thickness near the base. A pronounced spiral swirl is in evidence towards the closure of the base. Volume is 13.73 litres.

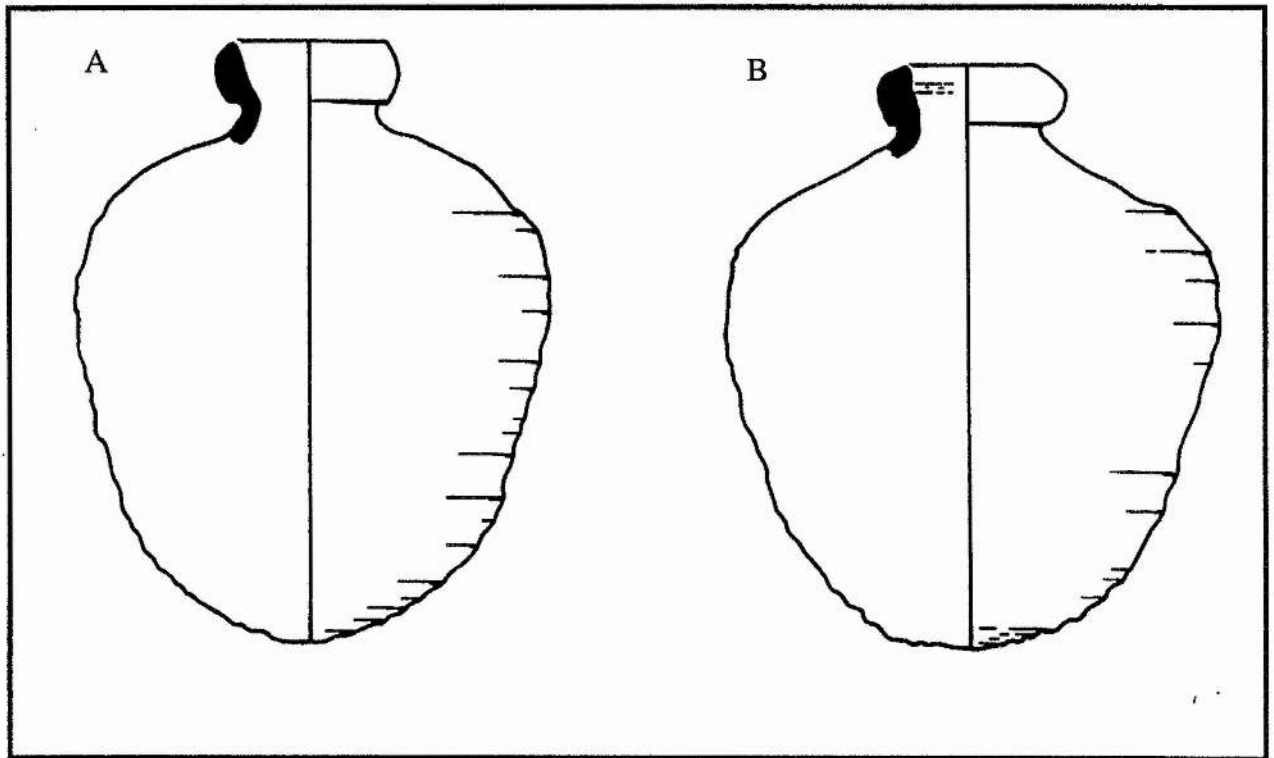


Fig. 4.78. 1/2 arroba botijas recovered off Barbuda.

The two **Type B** jars from 1695 have **Type 3** rims with a more semi-circular rim shape. Their rims are distinctly different from those of the **Type A** jars. The general appearance resembles jars from the early 18th century (discussed later). **Fig. 4.78 No. A** is a **Type B** jar with a **Type 3** rim. Exterior paste is tan to white-pink with numerous gritty inclusions. The rim on this example is heavily concreted on one side and sloppily constructed, with air pockets visible on the exterior and several clay droppings on the interior base. Volume is 5.175 litres.

Fig. 4.78 No. B is similar the above with tan to whitish paste on the exterior with a brownish interior paste. This example also appears to have been hastily manufactured with air pockets

visible in the walls and clay droppings on the interior base. A well defined spiral swirl is pronounced on the exterior base where the bottom was closed by the potter. Volume is 5.71 litres.

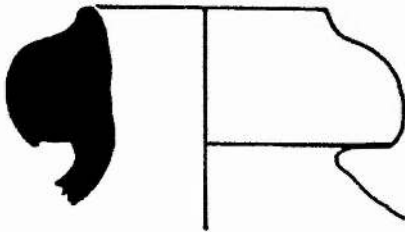


Fig. 4.79. 1695 rim.

Fig. 4.79 shows a rim profile from the Barbuda assemblage with a **Type 3** rim and a slightly raised lip. The upper part of the thickened rim just below the lip is partially smoothed almost to the point of being a **Type 4** rim although it is not concave.

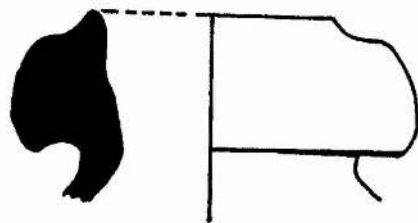


Fig. 4.80. 1695 rim.

Fig. 4.80 is similar to **Fig. 79**, also a **Type 3** rim although the plateau just below the lip is not as depressed. The join under the thickened exterior rim is smoothed.

The **Type A** forms from the Barbuda assemblage combine attributes from the early part of the 17th century as well as subtle attributes which may be associated with forms found in the 18th century. The rims have a distinctly pronounced lip which appears only sporadically (at best) in the recorded assemblages from earlier in the century in addition to the small plateau just below the lip which may be a precursor to a **Type 4** rim form.

The body forms, however, retain the more slender tapered look of jars from the earlier part of the century. If the jars are indeed from 1695, the subtle changes in rim form associated with the 18th century would logically have its roots in this transitional form. The smaller volumes of the 1695 **Type A** jars compared to examples recorded from earlier in the century may indicate that the jars were intended for a different measure. The two **Type B** jars are more closely associated with jars of the 18th century as their **Type 3** semi-circular rim shapes and sharp shoulder angle of the body would suggest.

18TH CENTURY OLIVE JAR-TYPE BOTIJAS

The first wrecks which provide opportunities for the study of jars dated to the beginning of the 18th century come from the plate fleet which was wrecked on the coast of Florida in 1715. The wrecks have yielded a fairly large sample of *olive jar-type botija* material, although very little has been available for me to study. The wrecks are still being salvaged by a number of different private individuals under contract to the state of Florida. The one jar recorded for this study was kindly shown to me by Capt. John

Brandon of Cobb Coin Co. before it was turned over to the state of Florida. Reported by him to be from the *Corrigan's* wreck, I have little doubt that the recorded jar Fig. 4.81 is indeed from the group of wrecks identified as the 1715 fleet.

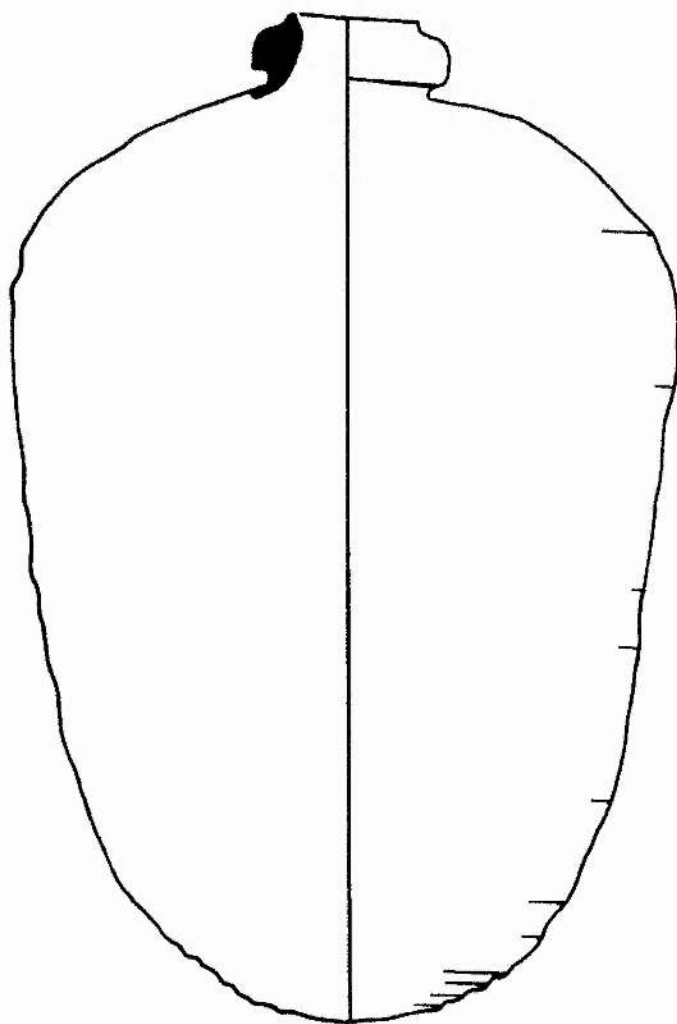


Fig. 4.81. Botija from 1715.

This time period is important in that the jump from the mid-17th century to the early 18th century displays some discernible stylistic changes evidenced in the jars. Beginning with the 1715 example, a broader shouldered, less tapered **Type A** jar becomes more predominant having slightly larger capacities. A definitive rim form change is evidenced with the **Type 4** style of

rim manufacture on the **Type A** forms. Because the change in rim construction is not subsumed in **Type 3** styles on the **Type A** jars of the 18th century, this feature is considered one of the most important differentiating characteristics of samples from earlier contexts. The introduction of the rim style probably occurred several years earlier, however, as with any stylistic change a period of overlap would be expected. A recent assemblage of jars reported to be from a late 17th century Spanish wreck off the island of Barbuda may link the two styles.

The one example from the 1715 fleet **Fig. 4.81** has “typical” *olive jar-type botija* fabric although clay preparation appears more refined and the paste is a little darker brick coloured with a more compacted nature. The tempering is achieved with fine sandy particles. Capacity was not determined as the location and time permitted for the recording made this impossible.

Later in the century, almost exactly 100 years after the wrecks of the *Atocha* (1622) and the *San Antonio* (1621), the wrecks of the *Tolosá* and *Guadalupe* wrecked in 1724 have provided a huge selection of jars currently available for further study at the Museo de las Casas Reales in Santo Domingo, Dominican Republic. The majority of the **Type A** *botijas peruleras* are housed in the museum on display with the large number of **Type B** and **Type C** examples housed in the main conservation lab. The individual jars are not marked, and the assemblage from the two wrecks is kept together on shelves.

Difficulties of time and access placed severe restrictions on this study. A random sampling was taken for recording simply by walking along the line of jars and picking some for recording. Unfortunately, there were not any of the “Type III” concave bottomed jars that are described by Steve James (1988) in the lab. All the jars look fairly similar from a general stylistic standpoint. A walk through was done examining rims and



Plate 4.7. 1/2 arroba botijas in shelves at the Museo Casas Reales, Dominican Republic.



Plate 4.8. Olive jar-type botijas from the Tolosá and Guadalupe wrecked 1724.

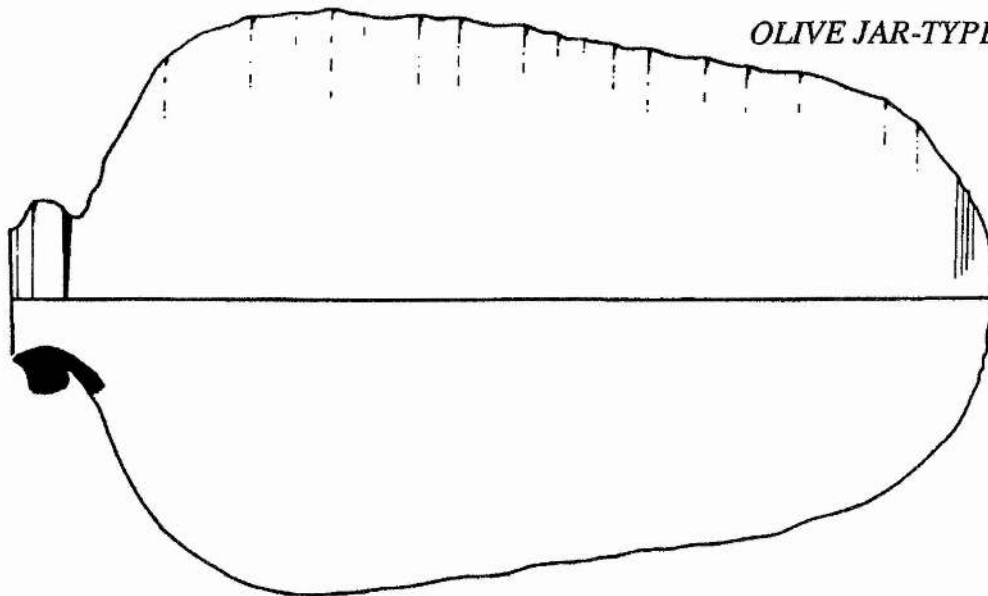
interiors with a penlight. The spiral swirl that indicates an upside-down manufacture was present throughout the collection, although slightly less obvious than in the earlier samples. Interiors all appeared more smoothed than earlier examples.

All observed rims from the **Type A** *botijas* have a distinctive **Type 4** rim construction. The rims of the **Type B** *botijas* all have a distinctly rounded and smoothed appearance. A general stylistic difference, although the **Type B** *botijas* all exhibit **Type 3** rim construction, is the more pronounced half-circle rim form in contrast to the semi-triangular appearance of earlier examples (17th century). The rims of the **Type C** conical examples, as well as the "James Form III" concave bottomed *botijas* all exhibit a **Type 4** construction without exceptions noted. Only one did not conform to general characteristics although it had a different style of tag and may have been from a different shipwreck.

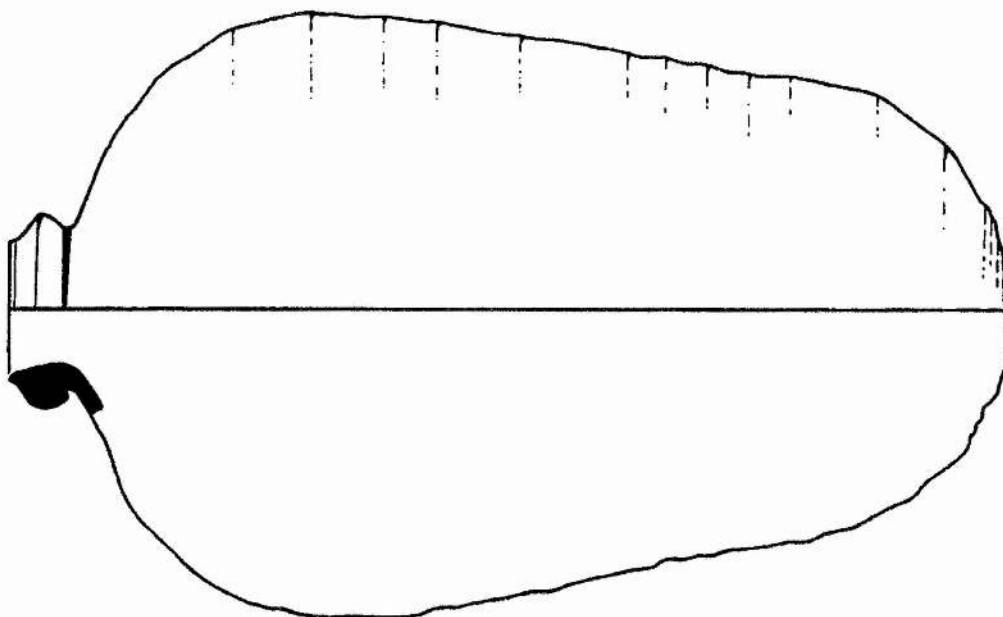
The exterior paste on most jars without glaze is similar, most having the characteristic white slip-like appearance although colouration is diverse and varies according to disposition on the seabed. Immediate stylistic comparison to earlier assemblages gives the impression that the jars are much more uniform.

Fig. 4.82. No. A is a **Type A** jar with a concreted exterior without visible evidence of a glaze. There are pronounced small closely spaced grooves evident on the exterior near the base. The interior is coated with pitch and the paste is tannish in colour with a tempering of sandy particles. There are no visible deformities with the exception of a small groove on the upper shoulder which may be a join mark or a poorly attached coil. Finger marks on the interior are similar to earlier examples. Capacity measurements on the **Type A** *botijas* were not possible because they are housed inside the museum on

C



B



A

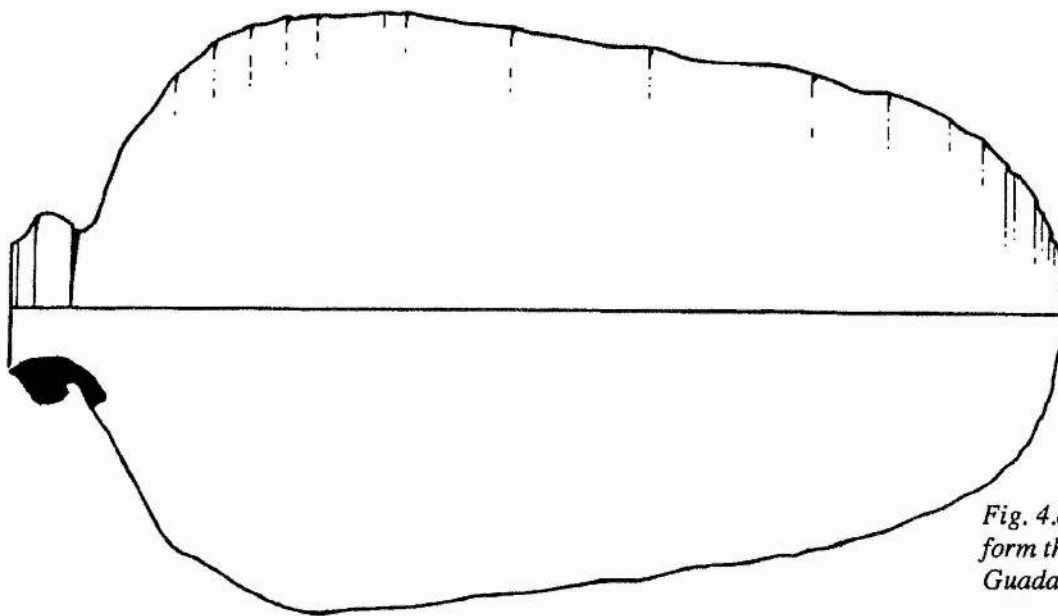


Fig. 4.82. Botijas
from the Tolosá and
Guadalupe. Scale 1/4.

display. Volumes for this study relied upon the study conducted by James(1988) two years prior to my visit.

The second jar **Fig. 4.82. No. B** is similar although it bears a heavy green glaze with a lighter interior glaze. The sides of the jar are more smoothed than the other examples. The spiral swirl indicating an upside-down manufacture is pronounced. Part of the upper shoulder has been pushed in on one side. The third **Type A botija, Fig. 4.82. No. C** is devoid of any glaze and has a heavy gritty paste, brownish tan colour. The interior bottom is more smoothed than the other examples although throwing marks are evident on both interior and exterior walls.

Fig. 4.83. No. A is a **Type B botija** with a thick emerald-green glaze with a rounded bottom. There are pronounced grooves on the base which may indicate the use of a tool to assist the potter in closing the bottom. The green glaze on the exterior of the vessel ends on the interior neck and the interior appears to be glazed in a clear transparent glaze, although it may be how the vessel was conserved. My guess is that it is a clear glaze since

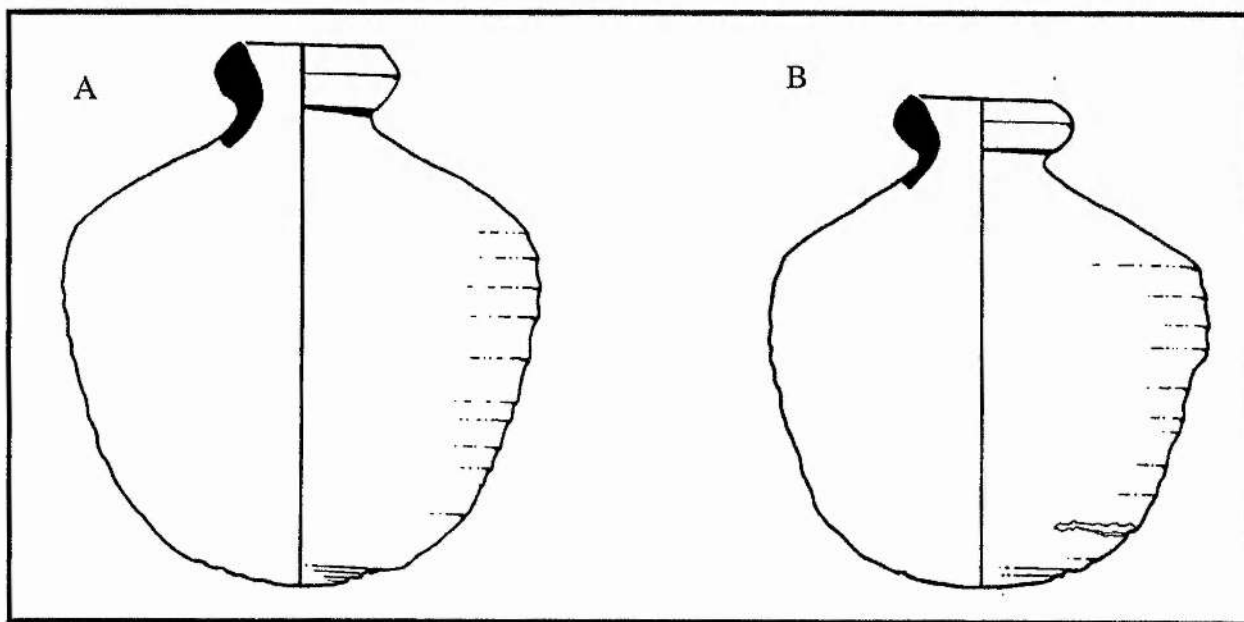


Figure 4.83. 1/2 arroba botijas. 1724.

the exterior of the vessel has not been treated in the same manner, and none of the others examined share this attribute. The paste is a light tan to pink grey-brown cored fabric with numerous inclusions visible, tempered with sandy particles. Capacity is 5.89 litres. The rim is a **Type 3** with a distinctly half-circle style further pronounced by a small ridge formed as the potter rotated his palm. **Fig. 4.83. No. B** is slightly smaller than the first with a light green glaze possible on the interior with a dribble of glaze running down the outside shoulder. It is similar to above description, and there is a white slip appearance on the exterior and a scar visible on exterior base. The jar also exhibits pronounced grooves on the base near very bottom. The paste is typical *botija* fabric with gritty inclusions visible on the exterior with a pinkish core visible on the neck. Tempering is with fine sandy particles. Capacity is 4.46 litres.

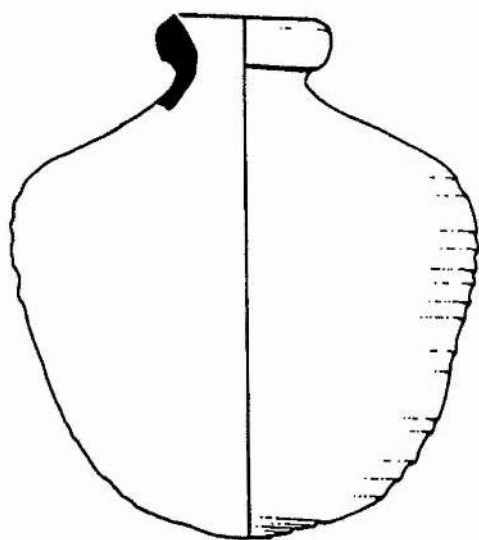


Fig. 4.84 is a **Type B** *botija* with a whitish exterior appearance and a rounded rim. Similar paste as above with numerous gritty inclusions. There is no glaze visible on the exterior although there is evidence on the interior rim of a green thick glaze, also visible on the interior bottom of the vessel. Capacity is 5.88 litres.

Fig. 4.84. 1/2 arroba botija. 1724.

In lesser quantities than the **Type B** jars, a total of 4 conical *botijas* (*botijuelas*) were located in the lab and available for study. An interesting note is that the **Type 4** rims all appear to have been finished with a tool causing sharper corners than on the other types.

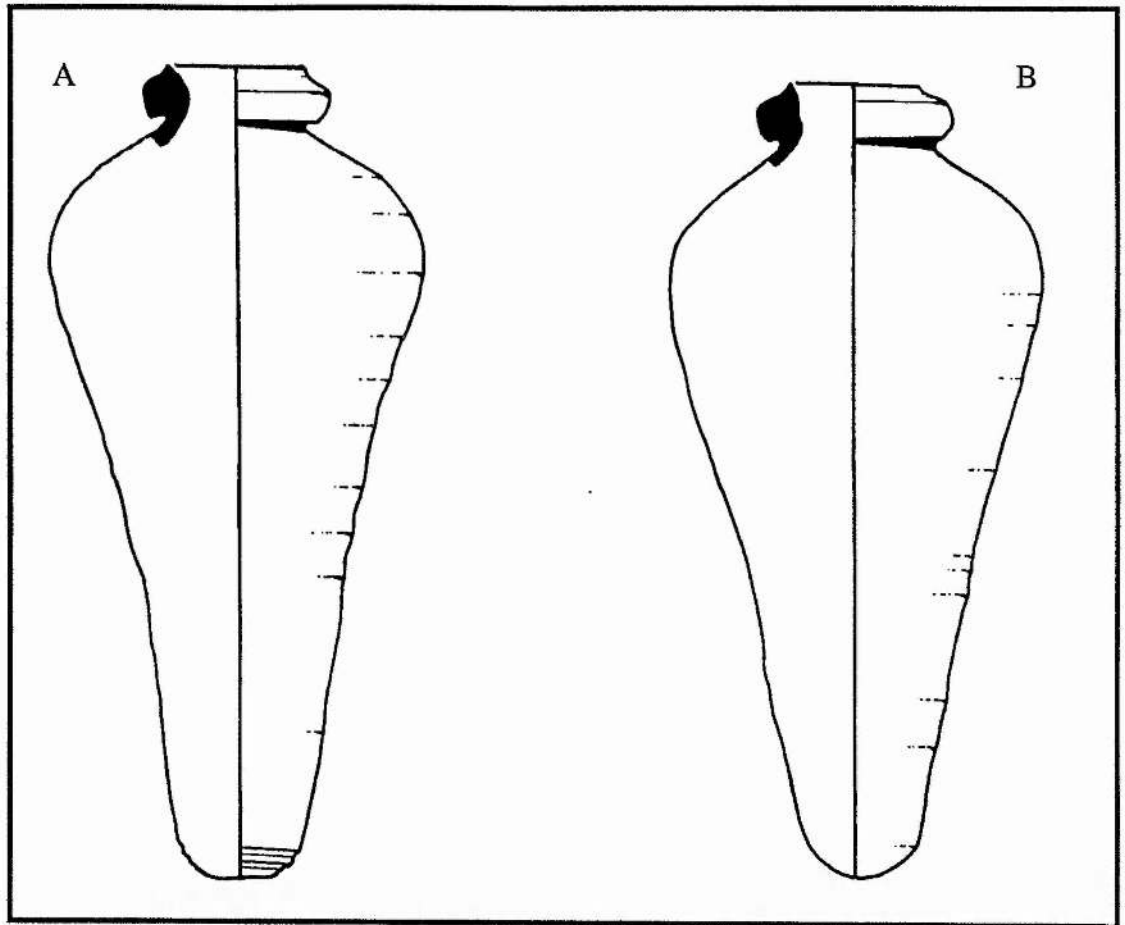


Figure 4.85. Conical botijas. 1724.

Fig. 4.85. No. A is a conical jar with a dark (blackish) exterior colouration resin-like residue on the exterior of the lip. There is evidence of the same spiral swirl inside the interior base although not as defined as the other types. There are also the same pronounced turning marks at the bottom. There is no glaze on this example and the paste is dark blackish to reddish brown exterior, with the interior tannish to pink-brown with numerous gritty inclusions; some looking a little like quartz with one shiny fleck on the exterior shoulder. Capacity is 3.4 litres.

Fig. 4.85. No. B is similar to the above although no throwing marks are visible on the exterior due to heavy erosion. There is a spiral swirl evident on the interior bottom. The paste is tan coloured and grey cored with numerous gritty inclusions tempered with sandy particles. Capacity is 3.6 litres.

Fig. 4.86. No. A is a conical *botija* with pronounced turning marks on the bottom and sides, apparently smoothed with a tool, leaving small incised scrapes. The exterior has a corroded whitish slip appearance, although the exterior is mostly worn revealing the paste. Interior turning marks are evident with strong evidence of a swirl at the bottom.

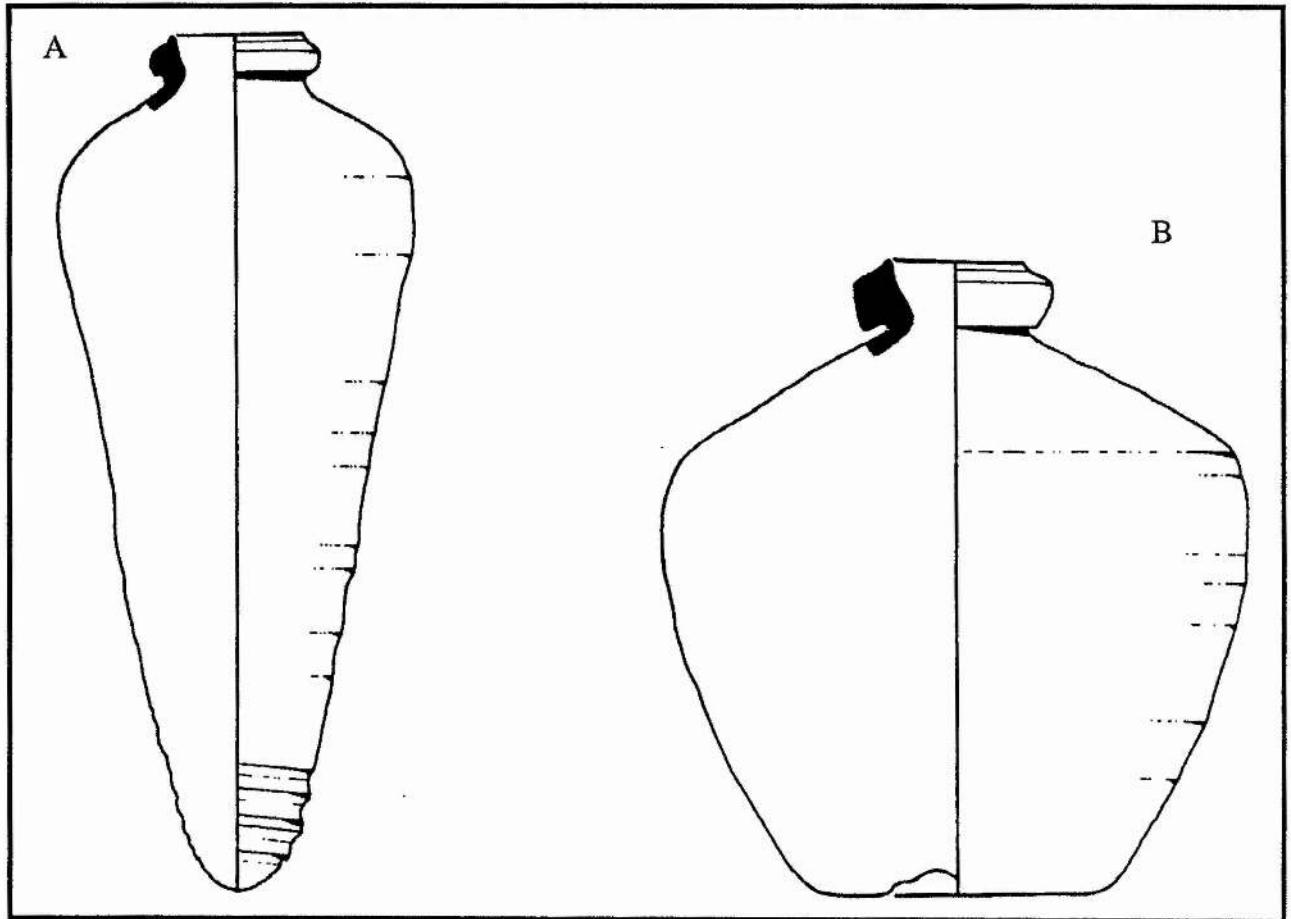


Figure 4.86. 1724. Conical *botija* and a James' Form III (after James).

indicating an upside-down construction for the conical jars. There is no glaze apparent although there is some resin around the interior lip of the rim and pitch coating on the interior vessel walls. The paste is pinkish-tan to greyish in some places with numerous gritty inclusions tempered with sandy particles. Capacity is 3.78 litres. The capacity of an additional conical *botija* not illustrated is 3.28 litres.

Fig. 4.86. No. B (after James, 1985) shows an example of James' **Form III** concave base jars reported as part of the wreck assemblage. The type was first described by James as consisting of 11 examples from the 1724 wrecks (1985: 25). They are similar to the smaller *botijas* although they have a distinctive **Type 4** rim, and a concave base which allows the jars to stand upright. As there have not been any similar examples recovered from earlier wrecks its presence is considered an important temporal indicator. As no examples were available upon my visit to the Dominican Republic, type descriptions and characteristics are reliant on James' study (1985).

The latest 18th century finds known to this researcher are from the 1766 wreck of the *El Nuevo Constante*. Originally reported by Pearson (1982:26, 27) the ship's manifest recorded that the *Constante* was carrying four *botijos* of balsam as cargo (Pearson, 1990: 169). One tapered cork was recovered from the wreck (ibid.). The rim fragments also recovered indicated that at least three jars were present. The small amount of sherds- 111 in all (ibid.)- suggests that the jars were originally substantially less in number than the

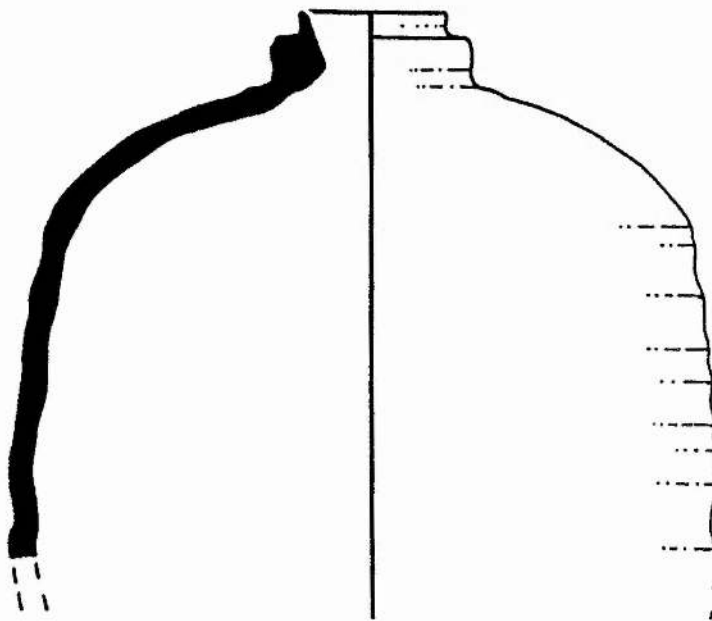


Fig. 4.87. Botija rim and shoulders from 1766.

large quantity from the *Tolosá* and *Guadalupe* (1724) and may indicate a phasing out of their use. In addition to the examples illustrated, 89 sherds were examined which had wall thickness of between 1cm and 1.4 cm. Over 62 % were glazed a light to emerald green glaze ranging to brown and almost yellow. The fabrics range from buff to brownish tan to light brown terra

cotta with fine mineral inclusions. Throwing marks are evident on the interiors and exteriors of the sherds.

Fig. 4.87 is the rim and upper shoulder of a large jar that is different enough in form to suggest a stylistic transition away from the **Type A** jars which occur earlier in the century. The compressed and thickened rim noticeably lacks the lower ledge which separates the rim from the neck and shoulders which is characteristic of **Type 3** and **Type 4** rims. This new rim type which I have called **Type 6** has not been encountered in earlier assemblages and may mark the beginning of a new style. It may have been a well smoothed over join

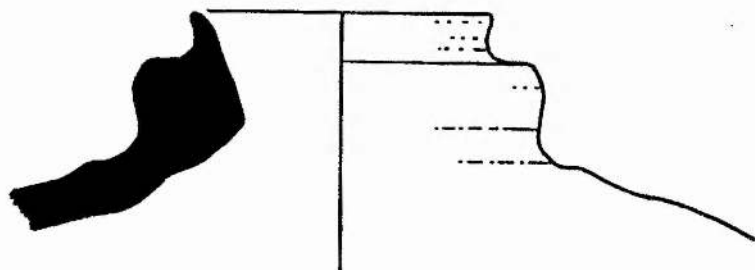


Fig. 4.88. Type 6 Rim. 1766. Scale 1/2.

of a **Type 4** shape with an exaggerated lip or formed by pushing the excess clay around the neck down towards the shoulders and pinching the top for a lip. The interior is a sloped "V" fashioned for a cork.

Throwing marks are evident on the interiors and exterior walls. The paste is similar to the sherds and the walls are covered in a green lead glaze. **Fig. 4.88** is the rim from the above jar at a bigger scale.

Fig. 4.89 is a rounded, slightly pointed base covered in green glaze. The spiral swirl on the interior suggests a similar construction technique as employed on the earlier jars (discussed later). The paste is tannish brown with a grey core and visible mineral tempering.

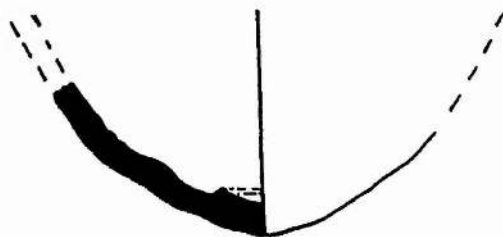


Fig. 4.89. Base from 1766. Scale 1/4.

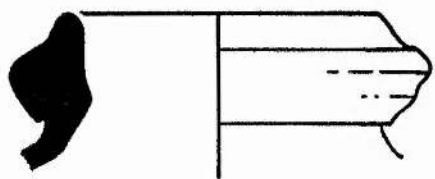


Fig. 4.90. Rim from 1766. Scale 1/2.

Fig. 4.90 is a rim which has characteristics of the **Type 4** style although part of the profile is thicker and looks as though it was shaped using finger tips instead of a braced hand. It is covered in a green glaze covering an off- white to pinkish terra cotta paste with mineral tempering. Some small sections of the rim overhanging the neck are almost smoothed over although not as definitively as the previous example.

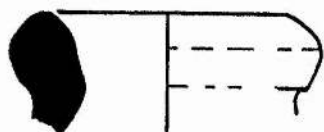


Fig. 4.91. Rim from 1766. Scale 1/2.

Fig. 4.91. is a rim which is similar to the half circle **Type 3** rims found earlier although the wall at the neck is thicker which may mean that the rim was rolled over to make it thickened rather than added. There is less of a definitive ridge on the middle exterior although it is perceivable. The rim is glazed green with a light tan to terra cotta paste containing several large whitish mineral inclusions.

The examples from the *Constante* may prove to represent a stylistic change for the jars as all three previously recorded types do not appear to be present. The jar form in Fig. 4.87 may be a version of Goggin's Late Style Type C (1960: 12 - 13) if the slightly pointed base is part of the same form or possibly a later version of the **Type A** shape. The associated rim form, however, marks an important temporal change and because it does not occur in earlier contexts it should be considered a stylistic change.

The *Elizabeth*, a ship wrecked off Western Australia on route from Manila, in 1839 yielded at least three *olive jar-type botijas* and a number of sherds categorised as Goggin's Late Style by Henderson (1973). The contents of the jars included olive seeds, grape seeds, and passion fruit seeds, (ibid.: 7, 25, 27). Glazing was not evident on any of the jars (ibid.: 27). The jars pictured and illustrated in Henderson's report closely resemble

Goggin's Late Style D jars (1960). **Fig. 4.92** (from Henderson) illustrates one of the 19th century examples. Of important note is the **Type 6** rim form which is similar to the example recovered from the *Constante* (1766). It has a compressed rim with a raised lip. At the shoulders the walls invert dramatically to form the long narrow bottom associated with the shape. Paste on the jars ranges from a pale yellowish white to pale salmon (Henderson, 1973: 24). A find similar to the *Elizabeth botijas* was recovered from a trench in Charleston South Carolina (1987: photographs were sent to this researcher by Roland Young of the South Carolina Underwater Archaeological Research Council, Inc., on file)

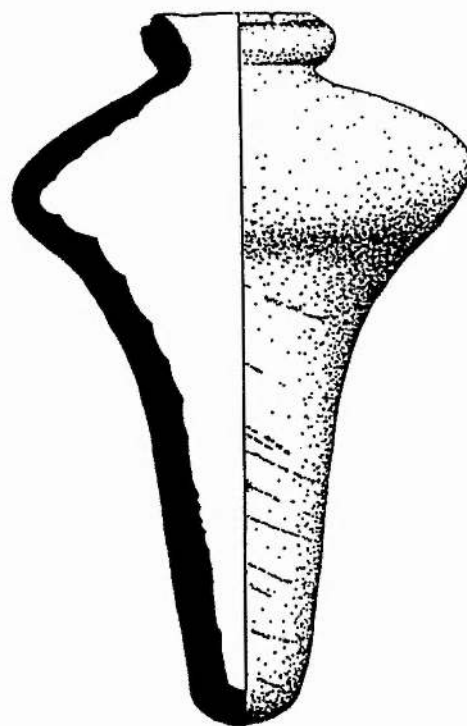


Fig. 4.92. Botija from 1839.

The finds from the *Constante* (1766) seem to mark the beginning of important stylistic changes and a dramatic reduction in the numbers of jars encountered on associated wrecks. The examples from 1766 and from the *Elizabeth* (1839) may be attributed to Goggin's Late Style which he appropriately dated to range from 1780 to 1850 (1960: 24).

MANUFACTURE TECHNIQUES

A discussion of manufacturing techniques is now overdue because so much has been written about the intentions of the potters without first exploring how the jars were made. It is hoped that further understanding of how the jars were made may help us understand why they were made. In his introductory study Goggin states that the:

"Middle Style... ..type was so well made that the exact method of manufacture is concealed. It seems apparent though that the body was thrown in two sections on the potter's wheel. These were apparently joined at the shoulder, but on all jars observed this joint is well smoothed over. A thick ring mouth, itself thrown on the wheel, was added." (Goggin, 1960:12).

The thousands of sherds and whole vessels encountered in this study have helped elucidate some aspects of the manufacturing technique. First, it is evident that the finished products were entirely utilitarian in purpose. The sloppy, hasty construction makes it clear that function far surpassed quality in the manufacturing process. Speed was evidently all-important. Jars with major defects such as bubbles in the walls, lopsided rims, and uneven bodies all managed to pass the only test: their ability to hold the intended contents.

The *olive jar-type botijas* were formed on a potter's wheel and fired in a kiln. The jars were probably fired at a temperature of around 1000°C (Rhodes, 1968: 35). Characteristic spirals, finger impressions, and mid body form variations make it quite evident that the jars were individually thrown, without recourse to the use of templates or moulds. An overall lack of uniformity results, even when jars evidently belong to the same batches.

The several complete basal pieces offered the first clues towards the method of manufacture. The noticeable "spiral swirl" at the centre of the exterior bases was the first indication that the bases were actually constructed upside-down. There are also small

irregularities and clay droppings on the inside of the bases appearing as small amounts of the excess clay were unintentionally squeezed through the opening just before closing. These characteristics could only occur if the potter could not see or reach the droppings to smooth them. The lack of finger marks on the interior of the base ending just before the closure, supports this conclusion.

Using this as a start, we can postulate two possible methods of construction. The first begins with the top of the jar on the wheel head with the potter working upwards to the base. The large size of the **Type A** vessels create questions as to the possibility of the entire body form of the jars being made in a one "throw" process. It is unknown if the wet and easily pliable clay could support such a large body size. It has been speculated that quickly thrown wet jars probably could hold their shape as extended throwing would have made the clay more plastic and less able to hold its own weight, further explaining the need for a high-speed throwing process (Martin, 1989: pers.comm.).

In all the collections and sherds studied by this researcher, there were no definitive shoulder or mid-section joins as suggested by Goggin (1960: 12) that would indicate the jars being made from two separate pieces. A great deal of expertise would be required for a "one throw" procedure, to pull the walls to the top, then to close the cone shape so that the sides would be supported by the base. The potters engaged in the mass production of *olive jar-type botijas* would have specialised in their manufacture producing little else, developing the special skills needed to compensate for uneven and lopsided jars as these unbalanced jars are more difficult to complete (Martin, 1989: pers.comm.).

A two piece construction is also unlikely due to the wholesale crudeness experienced in the mid sections of the vessels which would have made it difficult to perfectly match

two halves, and the general flow of the body form lacks any obvious misshaped connections. In addition, as so many of the jars show signs of poor clay preparation which resulted in bubbling and firing flaws, one would think the percentage of unuseable containers would be much higher if two separate vessels were joined to make one.

If the jars were thrown in one process, the use of a mould for the top part of the jar (the part on the wheel) is possible. After forming the shoulders on the mould, the mid-section would be pulled upwards by the potter's hands on either side of the vessel walls as evidenced by finger grooves present on the interiors and exteriors. If the jars were not thrown from one lump of clay, it is possible that clay was added to the walls as needed using the coiling process (rolling a large cylinder of clay and adding it to the walls of the vessel to give the potter more clay to continue pulling the clay upwards to its desired height).

When the bodies were completed, the egg-shaped vessels may have been removed from the wheel and left to strengthen by leaving the jars out for a few hours of drying in the sun. At the leather hard stage the pot would no longer be in danger of collapsing. When the vessel could support its own weight but was still easily workable, it was then turned right-side-up and placed on a "chuck", or cylindrical ring used to hold the jar upright. The top portion of the jar was then punctured and a hole cut to form the neck of the vessel. The rims were then thrown on to the mouth.

There are several examples with a small scar around the exterior base which have led scholars to believe it was the result of a mould flash and that the rounded bottoms were the result of the vessel being thrown from bottom to top out of a mould of biscuit clay similar to a technique used today in Pakistan (Martin, 1979: 282 after cf. Rye & Evans, 1976: 215 and pl. 14e). My contention, however, is that the scars which appear on

several of the examples may have been caused by the almost finished jars being placed upright in the chuck, to facilitate the addition of a rim.

After the vessel form was completed and the jar placed in the chuck, the exterior waste around the shoulders and neck was then smoothed, and the initial lip for the mouth formed. The general shape of the mouth, a sloping "V", indicates manufacture specifically for insertion of a cork.

Another possible method of manufacture is still in use today. After the above method of construction was hypothesised, the possibilities of a wheel adapted version of techniques now in use for the manufacture of *tinajas* (medium sized globular vessels with handles, and a narrow flared-rim mouth) from the central region of Guatemala was learned (Reina and Hill, 1978: 70 - 75). Similar to our *olive jar-type botijas*, a modified construction method may have been practiced.

Reina and Hill (ibid.) describe the following process without the use of a potter's wheel. Construction of the Guatemalan *tinajas* begin with rolling a heavy cylinder of clay, laid in a circle on the workboard, from which the walls are worked upwards. "It is important to note that he (the potter) is building the vessel in an upside-down position. That is, the rim of the vessel is resting on the board, and he is building upward to what will be the rounded bottom... ...The pressure exerted by his little finger and the edge of his palm leaves deep wide grooves on the exterior and forms a collar of clay on the top... ...The potter draws this collar higher, in stages, as he continues to raise the walls.

(As he works his way up,) the collar at the top of the work is now much reduced in size, and the potter is ready to begin closing over the bottom. In this stage of production, the potter draws the palms of his hands up along the exterior toward each other at the top. He repeats this motion around the vessel, which takes on the appearance of a smooth, truncated cone. With the opening at the top further reduced, the collar of clay is almost indiscernable... ...The vessel begins to lose its cone shape and becomes a pointed dome.

(Using a wet corncob as a smoothing and shaping tool)... Each short smooth stroke brings a bit more clay closer around and over the opening, and the potter slowly removes his right hand until only the four fingers are left inside... ..the potter draws up clay around the opening into a small collar that he will use to close over the bottom of the vessel. He continues using the corncob with short strokes and removes his fingers, one at a time, from the opening as it shrinks. This is a crucial moment, for the walls need continued support around the opening, and the potter must close the bottom over while the clay is soft. Only the last joint of his right forefinger remains inserted in the opening, when suddenly the potter withdraws his finger and closes the opening in what is almost an act of magic... ..leaving it on the workboard, he sets the vessel aside to dry.

After the vessels are dry enough to support their own weight, the potter—who has been working on several vessels in various stages of construction—places those that are to become *tinajas* in collars of rushes and cloth to support their rounded bases. He fashions the shoulders by adding coils to the rim and working inward, then allows each vessel to dry further before adding the handles and the neck... ..He forms the neck from a simple coil of clay that he pinches on at the opening left when he completed the shoulders; he raises this coil in a manner similar to that employed in making the vessel walls—pulling up the clay between the fingers of his two hands, one on the interior, the other on the exterior(ibid.).

This technique may have been used similarly on a potters' wheel for the manufacture of our *olive jar-type botijas*. While working on several jars in various stages of manufacture, the potter would be able to work continually throughout the day producing numerous jars, possibly hundreds. In the manufacture of the Guatemalan jars the potters continually smoothed the interiors and exteriors (ibid.) and one questions whether the droppings left by manufacturing the bases upside-down would not have been smoothed by the Spanish potters during some stage of the process if it was possible. Droppings and throwing marks also preclude the speculation that the jars' bases were formed over a mould (Listers, 1987: 135). The fact the jars are rarely smoothed at all, however, may indicate that any wasted time making the jars more aesthetic was unnecessary.

Impressions of grass or straw have been observed on the lower portions of vessels

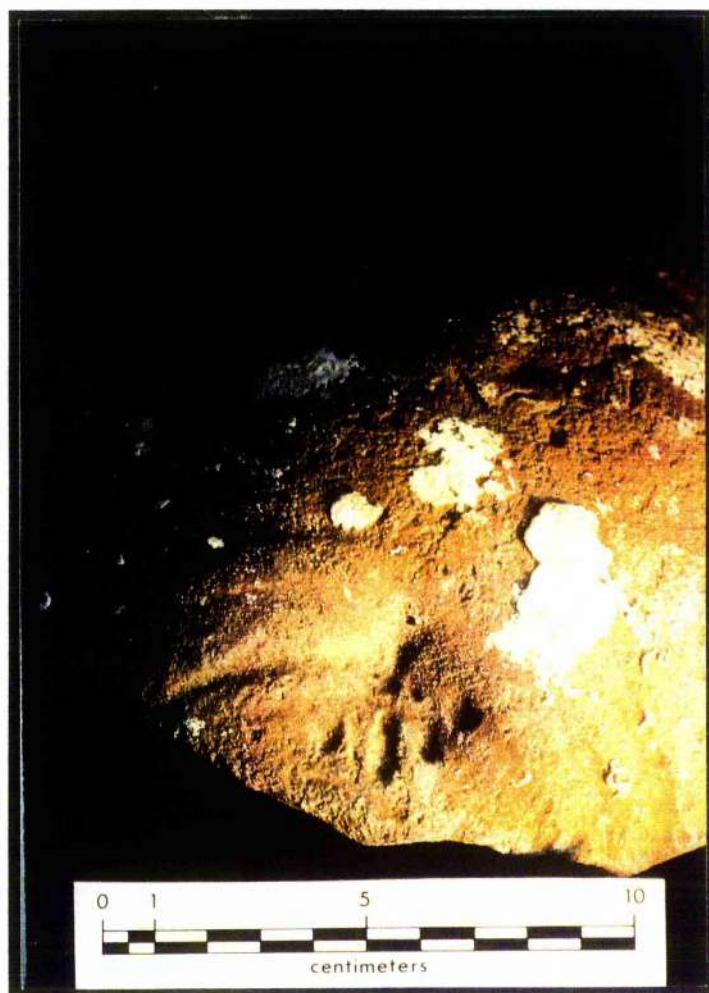


Plate 4.9. Animal footprint on a botija base

encountered in this study, which may indicate that if the jars were not left to dry on removable wheelheads, then they may have been placed in straw holders or simply laid on their side while still wet. Evidence that at least at one point in the manufacturing process the still pliable bases were exposed comes in the form of a small animal footprint impression (**Plate 4.9**) noted on a jar from the *Atocha* (1622).

Supportive of the “shoulder mould” technique is a general lack of throwing marks on the exterior shoulders of the jars. This may have been a result of the potter using a tool or sponge to help

bring the shoulders to the neck or the direct pressure of the palm of the potter’s hand, as opposed to his fingers, used to bring the clay to a mouth. A downward pressure with the flattened palm may have been more functional than one or two fingers.

A general size parameter could have been met with either process. The first would have involved the potter’s estimation of height above the mould, using the mould as a guide for the maximum width. The second process could be gauged by measuring the circumference of the area below the shoulders when the rim was sitting on the wheel head, or simply by using standard-sized lumps of clay.

Although it is difficult at this point to say without doubt which of the two processes were used, my leaning is to whichever method could produce the most amount of jars in one day by a potter. Simplicity may be the logic needed to answer the questions. The precarious nature of a large bubble of clay may have been too risky for an operation dependent on rapid production. Because of the characteristic similarities of both the smaller Goggin **Type A** and **Type B** styles it seems likely that both types were thrown the same way. Such haste in production would naturally lead to jars manufactured with fair amounts of variation although specific parameters may have been defined. In this light, it would therefore make sense to attempt to slightly exceed certain minimum capacity requirements (discussed later) in order to meet the basic qualifications.

RIM MANUFACTURE

Much time was spent examining the rim profiles recorded for this study. As the examination progressed, distinct differences between rims began to emerge. It was determined that subtle variances in the method of manufacture evidenced by subtle characteristics among the dated rim forms can be used to help define temporal ranges. Using scale cut-outs of rim profiles from accurately dated wreck samples, the subtleties which became recognisable differences to this researcher were studied in great detail. It was thought that the differences, on rims which often bore identical primary measurements, could be explained through variations in the process of manufacture.

It was hoped that by using the characteristics of human hands as a guide, certain recurring attributes would vary with changes in the manufacture process. In addition, the telltale attributes of one technique might be almost impossible to achieve if the process was changed. By applying this approach to the large samples of whole jars encountered in this study it has also been possible tentatively to associate specific rim

forms with specific jar types.

The difficult part in assigning rim sherds temporal ranges without knowing the type of jar in question, results from the use of similar techniques of rim manufacture, used throughout the periods in question, for different jars. In other words, some jar forms have similar rim manufacture techniques that occur in other time periods on different jar types.

Because no unquestionable Goggin "Early Style" jars were found in any of the shipwreck collections, the method of manufacturing technique for this type is not known. The one exception may be an example from the Spanish Armada of 1588 (Fig. 4.11.No. A from Martin, 1979; Fig. 1, #4: 280). This and other recorded Early Style rims (Goggin, 1960: 10) appear to be simple flared cylinders, without the characteristic reinforced mouth. Some have evidence of an everted lip. Early Style mouths extend further from the body than the Middle and Late Forms, ranging from 34mm to 38mm above the vessel (Goggin, 1960: 27). The example from the Spanish Armada of 1588 (Martin, *ibid.*), however, appears to lack the characteristic height away from the body and may be a transitional form, or a rim from a flat-bottomed *olive jar-type botija* similar to examples recovered from 17th century contexts. The type of rim manufacture associated with the Goggin Early Style is called "Type 1".

Only represented by one example from the Padré Island Shipwrecks of 1554, Type 2 rims may represent the beginning of a shift from the fragile, extended and unenforced flared mouth, to a shorter sturdier rim. It has been speculated that the transition to a compressed and thicker mouth, in addition to the departure from handles, was directly associated with the role the jars played in shuttling supplies across the Atlantic (Skowronek, 1987: 107).

Skowronek points out that:

“the longer, and so more expensive voyages ... demanded that a ship’s payload be borne in a cost efficient manner taking as little space as necessary and limiting losses due to breakage. To utilise space between casks and in the bilges of the vessel to the utmost, olive jars lost their encumbering, breakable handles and there was a shortening and thickening of the neck/mouth into a sturdier, less vulnerable, and more secure point for tying off a cork or stopper for the rough Atlantic crossing (Goggin 1960: 13, Skowronek et al., in press).” (Skowronek, 1987: 107,109)

The 1554 rim (**Fig. 4.93**) is important in that it may well be the “missing link” in the transformation from Early Style **TYPE 1** rims to the Middle Style. The rim may also have been a typical example of jars which had been in use since the early years of discovery. **TYPE 2** manufacturing techniques may include pressing the top of the rim mouth down with the palm of the potter’s hand while bracing the interior with a single fingertip, while the jar rotated on the wheel, simultaneously forming a seat for the cork closure. It is important to note that a relatively small amount of *olive jar-type botija* material was recovered from the three wrecks. Possible explanations and a further evaluation are discussed in the section on jars from the 16th century.

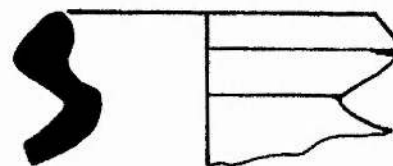
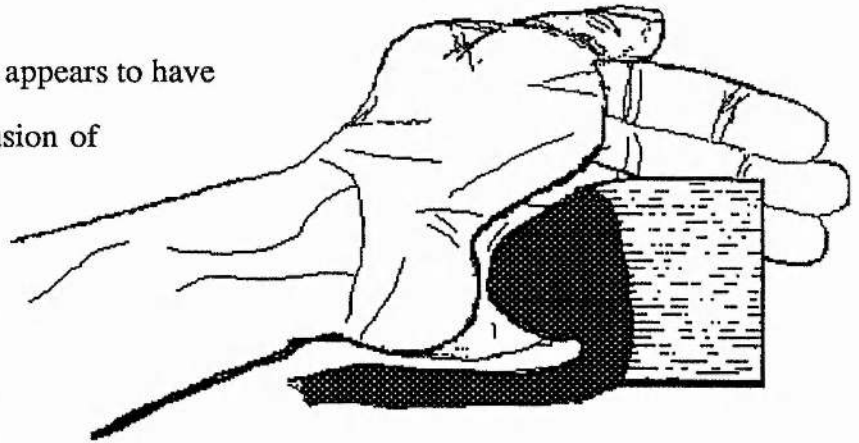


Fig. 4.93. Rim from the wrecks of 1554

By far the most numerous, and continuous rim form, **TYPE 3**, occurs with minor variations on jars from the end of the 16th century continuing to the 18th century. These finds indicate that the rims themselves were added and connected to the existing mouth. Means of manufacture may include rolling a cylinder of clay, then wrapping and throwing it around the mouth. On several of the examples join marks are visible on the interior of the mouth and under the rim on the exterior connecting the neck. There is evidence of smoothing the interior of the mouth with a finger while turning, thus completing the join, and moulding the interior mouth for sealing with a cork.

The exterior added rim appears to have been braced during the fusion of the interior mouth to the rim with the opened palm of the potter's hand (Fig. 4.94). This method, if correct, is crucial in the differentiation of rim types that may signify stylistic changes.



The curvature of the exterior rim fits nicely into the arch formed by the lower muscles of the thumb and the lower outside muscle of the hand. By holding one's arm outstretched, with fingers forward, and looking down the arm towards the hand, the similarity to a **Type 3** rim profile will be perceived.

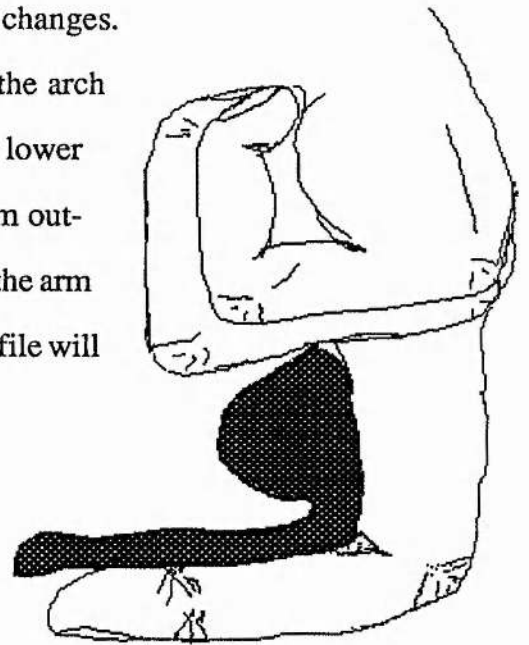


Fig. 4.94. Type 3 Rim Construction

In some instances, there is even a slight indentation in the upper shoulders of the jar which would have resulted from the lower hand brushing the top of the jar while shaping the rim

as the jar rotated using this method. Little attention was paid to the join between the exterior neck and the under portion of the rim. These joins are usually left unsmoothed. This technique evidently begins in the late 16th century on all recovered jars, and carries on to the 18th century although only on the *1/2 arroba botijas*.

Beginning in the early 18th century the rims of the *botijas peruleras*, James' **Type III concave botijas** (James, 1985), and the large conical *botijuelas* show subtle variations

of rim manufacture and will be called **Type 4** rims. The primary difference between **Type 3** and **Type 4** occurs on the upper half of the profile leading to the lip. It was noticed that, although generally similar to the **Type 3** process, there was a distinctive inward curve as opposed to a slight inward curve that appears impossible to achieve with the palm technique. **Fig. 4.95** shows the process thought to have been used to form the **Type 4** outer profile.

The potter, instead of using his palm, places the length of his thumb on the top of the rim while bending his fingers in an almost closed fist fashion to press the rim into the interior bracing fingers. Pressure from the outside of his bent index finger pushes the cylinder of clay into the mouth, while the thumb resting on top creates the charac-

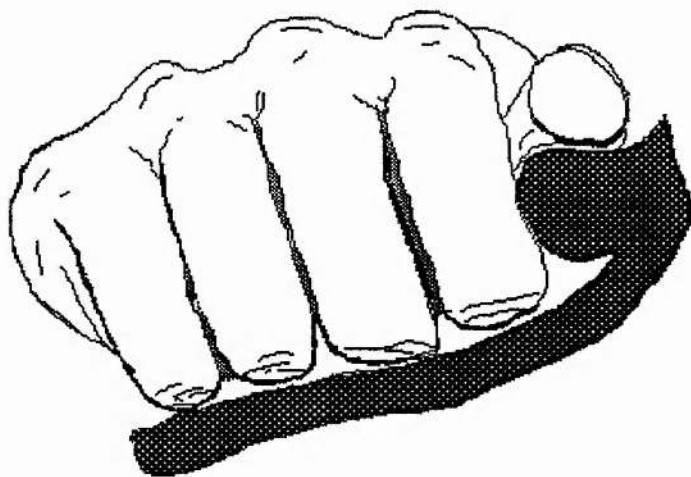


Fig. 4.95. Type 4 Rim Construction

teristic inward curve which would be impossible to achieve using the **Type 3** method. No examples of this process have been seen on any jars pre-dating an early 18th century time range and it is suggested that this form can be used as a temporal indicator. It is important to note that **Type 3** rim construction methods are still employed in the 18th century although primarily for *1/2 arroba botijas* and often appear more rounded with a semi-circular form versus a more teardrop appearance found on earlier examples.

Type 5 rims are similar to **Type 1** rims although they do not protrude from the body as far as the **Type 1**(Early Style) examples described by Goggin (Goggin, 1960: 10 Fig.3). During the course of this study, it was learned from two early 17th century sites

that *olive jar-type botija* fabric was used for flat-bottomed storage containers that did not conform to the traditional rounded bottom form. Body sherds are impossible to distinguish between our common *botija* forms. Because the paste is identical to that of the *botija* paste, addition of this type and rim form are included in the *olive jar-type botija* category.

Recognition of this type is important because its rims have a similar appearance to the **Type 1** form, and such rims found in isolation could therefore erroneously be attributed to the Goggin Early Style. Although it is important to note that the rim form has only been recorded in the collection of the *Atocha* dated 1622, it occurs in sufficient quantity to suggest that the examples do represent a specific type. In support of this, and of its restrictive date range, is the similar basal sherd recovered from the *Santa Ana Maria* (1627).

Differing from Goggin's descriptions of Early Style rims (*ibid.*), the **Type 5** rim appears to be a simple unenforced rim pulled from excess clay left over from construction of the shoulder or a small coil or cylinder added and formed around the opening. The rim may have been formed by exterior pressure from an inverted thumb while braced by a fingertip on the interior while forming a seat for a cork.

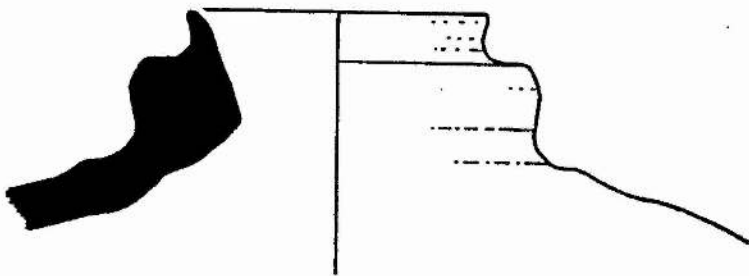


Fig. 4.96. Type 6 rim form. 1766.

The final type encountered in this study (Fig. 4.96) is called **Type 6** which was first recorded on the 1766 wreck of the *Constante*. It is characterised by a thickened outward-flaring rim that is connected to the shoulder of the jar, virtually eliminating the

neck. A pronounced lip is also in evidence. Similar forms occur on later jars recovered from the *Elizabeth* wrecked in 1839.

RIM STYLES SUMMARY AND ASSOCIATED FORMS:

EARLY FORMS

RIM TYPE 1: EARLY STYLE: FLARING HIGH COLLARED MOUTH:

Date: eliminated by the end of the 16th century

RIM TYPE 2: EARLY-MIDDLE TRANSITION: PINCHED COLLAR:

Date: mid- 16th century

TYPE A: BOTIJAS PERULERAS

RIM TYPE 3: PALM FORM FASHION :

Date: late 16th century

RIM TYPE 3: PALM FORM FASHION WITH RIM MARKINGS:

Date: early to middle 17th century

RIM TYPE 4: THUMB FORM FASHION :

Date: early 18th century

LATE 18TH CENTURY

RIM TYPE 6: SMOOTHED NECK TO SHOULDER WITH LIP:

Date: first recorded 1766 to the 19th century

TYPE B: BOTIJAS 1/2 ARROBA

RIM TYPE 3 : PALM FORM FASHION :

Date: late 16th to the 17th centuries; semi-triangular, Early 18th century; semi-circular

TYPE C: BOTIJUELAS (CONICAL)

RIM TYPE 3: PALM FORM FASHION :

Date: early 17th century

RIM TYPE 4: THUMB FORM FASHION:

Date: 18th century

FLAT-BOTTOMED BOTIJAS

RIM TYPE 5: SHORT COLLAR:

Date: early 17th century (1620's)

RIM MARKINGS

Goggin reported that: "Stamped, incised, and engraved marks all occur on this type of olive jar (Middle Style). The stamped marks, while rare, always occur on the ring mouth. They are presumably factory marks, as is a single incised mark. Engraved marks (post firing) are found on the body and apparently were additions by later users." (Goggin, 1960: 15)

Rim markings, both stamped and incised, have been recorded only on **Type 3** rims, and engraved marks on jar shoulders, dating only from wrecks in the early 17th century (*San Antonio* 1620, *Atocha* 1622, *Concepción* 1641). In this light, marks on *olive jar-type botijas* can be construed as an effective temporal indicator within a narrow time range. Because examples appear on all three securely dated wrecks from the first half of the 17th century, and in no other periods, marks should be considered useful in excluding jars from early 17th century contexts if large collections are recovered without these distinctive characteristics. Further support of this hypothesis is the noticeable lack of marks from the enormous collections of the *Tolosá* and *Guadalupe* wrecked in 1724, and the wrecks of the Spanish Armada of 1588. The markings are now thought to be shippers' or owners' marks.

INCISED SHOULDER MARKS

In addition to the marks on the rims, several of the jars in the *Atocha* (1622) sample have designs or marks scratched into the shoulder of the jars. The designs, in some cases, are more elaborate than the incised rim marks and some are similar to ownership marks on the silver bars from the same wreck. It is possible that these marks also denote ownership or last-minute scratchings to indicate shipping and receiving. Here again, incised shoulder marks have only been recorded from one sample (the *Atocha* 1622).

Another question raised is the ability of shippers to scratch markings on jars when it has been speculated that the jars were covered to the mouth with matting or woven straw as discussed previously. Roman numerals may also denote batch marks.

SEALING

In the course of study several intact rims with corks still in place were observed from both 17th and 18th century contexts. The natural corks are tapered to fit the jar and often sealed with pitch. The print of an X-RAY of a sealed jar from the 1622 wreck of the *Atocha* (Plate 4.10) gives a good impression of how the finished product looked. Also evident from the print is a noticeable join where the thickened ring was placed on the cylindrical neck. Several of the rims recovered without corks in place had signs of running pitch on the interior and exterior of the rims supporting the pitch sealing method. One example reported has been recorded with a thin leather strap serving as a sealant around the cork (James, 1987: 49).

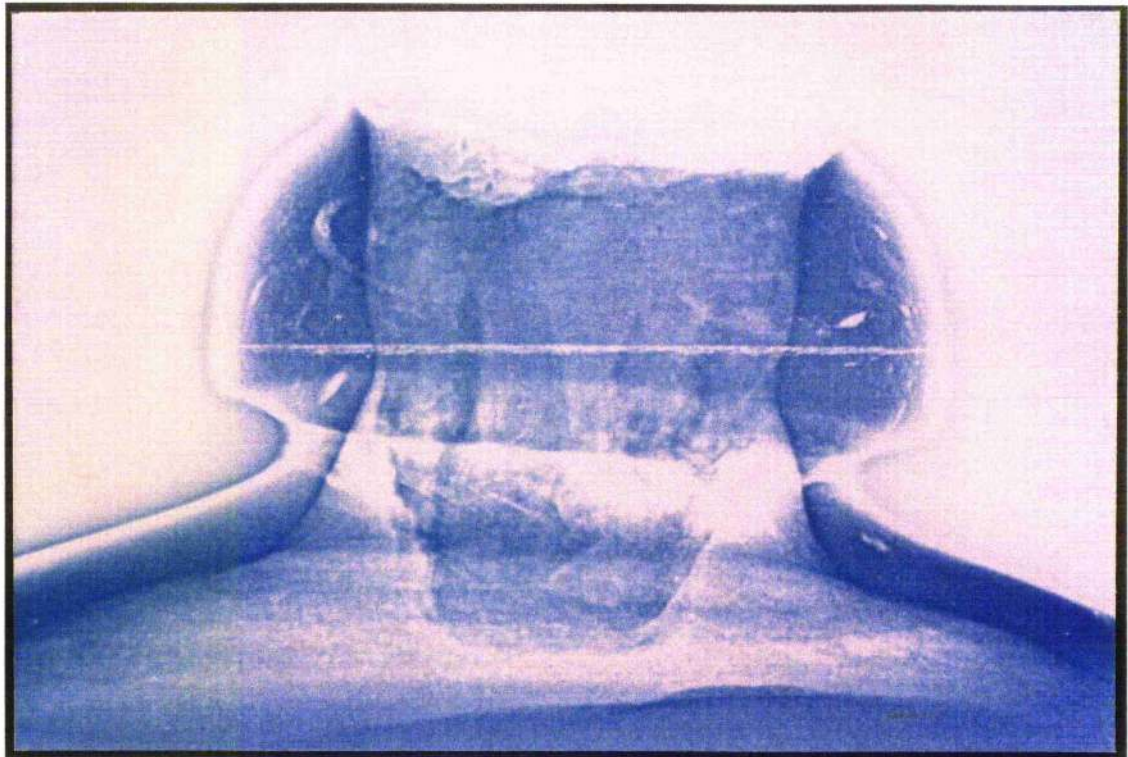


Plate 4.10. X-Ray of olive jar-type botija rim.

CONTENTS, COVERINGS & STOWAGE

As more historical documentation is combined with archaeological evidence, a more complete picture of the jars as they appeared in Spanish colonial times is coming to light. As archaeologists, we are accustomed to seeing the vessels and sherds as plain unadorned pieces of clay. When handling them, the awkward nature of an inverted cone-shaped jar with a small opening becomes evident. They are heavy when filled, yet very sturdy. When regarded as an integral part of a developing society, the jars themselves become part of the everyday process of dispensing, storing, and shipping the commodities necessary to sustain life. Exploring questions as to contents, coverings, method of sealing and packing, storing, and volume correlations can help us to understand the needs, tastes, daily routines and evolution of colonial society.

Evidence supports the theory that the larger jars (*botijas peruleras*) were primarily wine containers and also used for water. One *botija perulera* from the *San Antonio* (1621) recovered in Bermuda by diver Teddy Tucker with the cork still intact was full of wine which was tasted and pictured in *Life Magazine* (Teddy Tucker, pers. comm. 1986, Bermuda). While recording finds in 1986 from the wrecks of the *Tolosá* and *Guadalupe* (1724) several *botijas peruleras* recovered revealed substantial quantities of olive pits while others were filled with pitch. This was also reported and quantified by James (1988:49). A $1\frac{1}{2}$ *arroba botija* recorded in Bermuda from the collection of Brian Malpus is still full of a resinous substance which has yet to be analysed. Several reports cite all types of beans, and chick peas in addition to lard, and tar (Goggin, 1960: 6). In general, it would be safe to say that the jars served to carry almost anything that would go through the narrow mouth.

Additional transcriptions provided by Lyon show *botijas* listed as being "*esteradas y tapadas*," or covered with matting (woven?) and sealed.

3 October 1597—the Governor and Royal Officials visit the store room and find:

10 botijas of oil of *1/2 arroba* each — *botijas* covered with woven or mat coverings(?) (*enseradas*) and with the mouths sealed with plaster (*yesso*)—and having taken off the *seretas* to see and look....all were found to be (page portion burned) *54 pipes* of vinegar (merchant-style pipes) @ *864 cuartillos* per pipe. (Lyon, 1986: pers. comm. from AGI CD 947; mcf. PKY reel 25-G, fo. lvo. et seq.).

The entry dated 3 October 1597 addresses another question about the coverings of the jars, also noted in the other transcriptions, it appears that the jars were covered in matting. This woven matting would serve as a protective covering when stacking or storing the vessels in close proximity such as the hold of a ship. An example of woven mat recovered from the Spanish Armada wreck of the *Trinidad Valencera* (1588) may be similar, if not identical, to the woven matting described covering our *botijas*. The Armada find, however, is thought to be "*esparto matting*", used for "consolidating protective earthworks" while building ground fortifications for battle (Martin, 1988: 42). Martin has also reported that jars requisitioned for the Spanish Armada of 1588 were cased in woven straw for easy stowage (Martin:1988,56) as documentary sources related to the Armada have listed "*cinquenta arrobas de aceite en cien botijas de varro tapadas y esteradas hasta la boca*" (Archivo General de Simancas, Contaduria del Suelo, 2a. 274, 15 July 1587; from Martin: 1989, pers. comm.). This translates to "fifty *arrobas* of olive oil in one hundred *botijas* of clay covered in mat to the mouth".

Archaeological finds have not yet been recovered with this type of matting surrounding the vessels, most likely due to its organic and easily degradable composition, although salvors have reported that jars were covered with a decayed straw matting or on beds of hempline when first uncovered from the 17th century wreck of the *San Antonio* in Bermuda and from the 18th century wrecks of the *Tolosá* and *Guadalupe* in

the Dominican Republic respectively (Teddy Tucker, 1985: pers. comm.; also reported by Tracy Bowden, to James, 1985: 46). Of the dozen assorted *olive jar-type botijas* recovered from the site of the *San Antonio* (1621) it was reported that several of the small *1/2 arroba* size jars were "uncovered in a row, on top of the ceiling timbers, parallel to and just above the keel, wrapped in a burlap type covering" (Teddy Tucker, 1986: pers. comm.).

While remembering the historical lineage of *botijas*, and the strong influence of Italian potters in the Andalusian region (see Lister and Lister, 1987) it is no surprise to see the continuing of a woven straw covering tradition still used to protect the round bottomed Italian Chianti wine bottles we find today. Perhaps the mat covering incorporated a handle to facilitate carrying, hanging, or even a base for the vessels to stand upright.

Stowage of supplies for the long Atlantic crossings has been another neglected area of study. The lack of the archaeological practice found on most of the salvaged wrecks has lessened the chances of accurately recreating stowage techniques from the wrecks already discovered. Keeping the overloaded ships trim while under sail must have occupied a great deal of the captain's time and direction. Further research by Dr. Lyon in his "perusal of the 'Relation of the supplies, artillery...' delivered to the Florida forts from AGI CT 2932 concerning provisions on board *Los Tres Reyes*, (part of the Pedro Menendez Fleet of 1565) Lyon writes:

"It is evident that, on this ship at least, the famous "olive jar" was utilised in its smaller size for oil and in its larger size for wine and water, not olives or olive oil... Stowage of these supplies and the munitions took up considerable space in *Los Tres Reyes*. The newly-built orlops and the main hold were lined with tacked *esparto mats* to help protect the cargo, and bales of hay and wooden rollers were used to stow the highly breakable pottery vessels, which formed such a large part of the cargo. They also served to wedge the pipes and barrels from undue movement. It was the quartermaster's duty to see to the cargo stowage and re-stowage as foodstuffs were consumed, so that the vessel should continue to sail well." (Lyon, 1986: letter on file).

The description of “wooden rollers” to wedge the pottery while stowed may have been confirmed through archaeological finds. An *in situ* photograph of a 1/2 arroba botija from the wreck of the Spanish Armada ship *La Trinidad Valencera* (Martin, 1975: plate 15b), shows a wooden chock lying next to the partially exposed botija. Due to the scattered nature of this wrecksite, the presence of wooden blocks near pottery vessels may, or may not, be a direct association. More conclusively, however, were the *in situ* finds from the *Nuestra Señora de Atocha* (1622) which quite clearly showed evidence of round unfinished blocks associated with or near intact pottery finds. (Plate 4.11) shows one such example. It is quite possible that future finds of olive jar-type botijas from shipwrecks resting in anaerobic environs may reveal jars covered, filled, sealed, and blocked as described in our transcripts. A 1989 discovery of a galleon in 1500 feet of water off the Florida Keys may be such a find. Video footage revealed stacks of olive jar-type botijas, lying side by side, covering most of the exposed site.



Plate 4.11. 1622. Olive jar-type botija in situ with wood chocks.

VOLUME RELATIONSHIPS

Much speculation has been made about the intended volumes of jars, and whether the jars were used as pricing measures for the various commodities which they contained (Schafer, 1938: 317, 323). In light of the construction techniques discussed previously, it becomes clear that substantial variations would have occurred even though a specific volume may have been attempted. Only after reviewing the construction process is it appropriate to attempt an understanding of the intentions of the potters. The only way it would have been possible to achieve absolute uniformity would have been through the use of a complete body mould, which, as we have seen above, was not the case.

Given the two methods of construction discussed, one can hypothesise on ways in which potters attempted to standardise volumes. With the shoulder mould technique, standardisation might have been attempted through a general control of the height and tapering of the vessel. Given the "bottom half first" technique and coiling of clay needed around the leather-hard mid-section to form the shoulders and neck, it would be possible to use the wheel head as a general size parameter for the point at which the shoulders would continue. Height would also be estimated for the forming of the bottom and again when the top portion was completed. Both methods may have simply involved using a standard weight of clay and working it accordingly.

If the jars were produced with specific volumes intended, the question then becomes what percentage variance could be expected from a roughly estimated size. Given normal conditions, it would be reasonable to assume that if even precise volume measurements were intended, the degree of variance as expressed in actual volumes would be considerable. Today, experienced potters can create amazingly close duplicates only using the eye as a guide, although precise reproductions are impossible

even for the most skilled craftsmen. In attempting to qualify volume measurements from jars recovered in archaeological contexts, the use of percentages and precise capacity measurements may complicate a relatively simple question.

One might assume, given the Spanish crown's preoccupation with accountability and documentation, that accurate measurements of provisions would be as closely recorded as the shipments of gold and silver. Most authors addressing the question of specific measurements for jars and intended uses have pointed to the lack of historical evidence addressing the subject. It is not known whether the lack of available historical evidence is merely a lack of modern day interest in the field or whether it relates to a relatively low level of importance given to the jars and exact quantities they held.

General guidelines of jar manufacture for a myriad of uses was sufficient control enough to keep the mechanism of supplying the colonies in good running order. As mentioned previously, the jars may have simply accompanied the large measured shipments and served as a more convenient transportation method of known approximate sizes. For buying or selling at the lower volume level, the jars may have been emptied and measured for resale. A similar method may have been used by resellers as cooks on board the trans-Atlantic vessels; "an *almud* was on hand for measuring beans and peas and various other measures for the cook's use" (Arnold and Weddle, 1978:87). These foodstuffs were probably emptied from larger casks or even our *olive jar-type botijas*.

In an environment that places little importance on the precise measures of small containers, it does not make much sense attempting to quantify volumes beyond trying to associate jars with approximate size measures. Actual measurable samples available to archaeologists are only a small percentage of the jars that were produced, and one must

exercise extreme caution in attempting to qualify statistically results from scarce archaeological examples.

It has been speculated that historical records seem to express that the jars represented a specific form of measure. Because of the enormous quantities that the colonists were dealing in, however, a more practical solution seems feasible. If one were to assume that it was customary that jars only approximated a specific volume, it would follow that the actual measuring of the contents was done at some other point of the process. It has been suggested that hundreds of jars were shipped empty accompanying large casks of wine (wooden *pipas*) for example (Lister and Lister, 1987: 135). In this case, it would make little difference if the jars held specific volumes.

During the later half of the 16th century the process of shipping empty jars along with larger filled containers is reported to have ended, and the jars were then shipped already filled (*ibid.*). It is possible that the same principle was used before shipping the jars: the total of all the jars contained a measured quantity, with each jar holding an approximate measure. Knowing that the actual jars varied in volumes would not have mattered to wholesale merchants. When the smaller quantities were then later apportioned to consumers, the contents could then be remeasured in an accurate container.

The question then becomes the degree of importance one should place on volume relationships in proportion to the jars' overall meaning. With regard to contents and also to volumes and vessel forms, the Listers have aptly described the reasons behind the trouble modern archaeologists have in quantifying this period:

"Differences between archaic and modern terminology for Spanish vessel forms have led to considerable confusion about which jars were meant to hold which liquids. It is only academic, in any case, because that kind of invariability was not part of the

Andalusian attitude.” (Lister and Lister, 1987: 133)

Volume studies on recovered complete *olive jar-type botijas* typically calculate capacity by filling the container to just below the neck, leaving room for a cork closure, and thus recording the volume (Martin, 1979; James, 1987). When one orders a litre of wine in a restaurant, however, a litre container is delivered with a mark indicating the litre capacity, while the contents usually surpass the mark. A similar approach may have been used in producing *botijas*, the jars could hold the intended capacity and then some. It is also a presumption on our part to assume the jars were always completely filled. In any case, reviewing the capacities of jars in context helps us better to understand the complete picture. Using capacity as another temporal indicator in itself may in time help towards a better understanding of the evolution of colonial life.

Exploring the evolution of measures is another avenue of research that needs to be studied further before a full understanding is reached. The following table lists jars recorded during in this study:

VOLUMES 16TH CENTURY

TYPE A	TYPE B	TYPE C
17.50(HC)	6.25(SA)	
18.20(HC)	7.10(SA)	
AVERAGE	AVERAGE	AVERAGE
17.85L	6.675L	N/A

VOLUMES (UNKNOWN PROVENANCE)

TYPE A	TYPE B	TYPE C
18.60(BMC)	6.88(BMC)	N/A
18.20(BMC)	7.80(BMC)	
20.90(BMC)	9.20(BMC)	
18.65(BMC)	6.15(EDC)	
19.10(BMC)		
17.80(BMC)		
18.46(EDC)		
15.79(EDC)		
TOTAL: 147.5	23.88	
AVERAGE	AVERAGE	AVERAGE
18.44L	7.51	N/A

VOLUMES FIRST HALF OF THE 17TH CENTURY (PRE-1650)

TYPE A	TYPE B	TYPE C
17.10 (SAT)	5.00 (SAT)	2.18(SAT)
17.04 (NSA)	5.58(NSA)	2.74(NSA)
16.84 (NSA)	6.38(NSA)	1.62(NSA)
16.10 (NSA)	6.14(NSC)	
18.06 (NSA)	5.46(NSC)	
17.36 (NSA)	6.24(NSC)	
21.40 (NSC)	6.60(NSC)	
15.02 (NSC)		
17.60 (NSC)		
14.46 (NSC)		
16.45 (NSC)		
TOTAL:187.43	41.4	6.54
AVERAGE	AVERAGE	AVERAGE
17.04L	5.91	2.18

VOLUMES LATE 17TH CENTURY (1695)

TYPE A	TYPE B	TYPE C
13.73	5.18L	
13.7	5.71	
AVERAGE	AVERAGE	
13.715L	5.45L	

VOLUMES EARLY 18TH CENTURY

TYPE A	TYPE B	TYPE C
18.3*	5.88(TG)	3.78(TG)
	4.46(TG)	3.60(TG)
	5.89(TG)	3.46(TG)
		<u>3.28(TG)</u>
TOTAL:N/A	16.23	14.12
AVERAGE	AVERAGE	AVERAGE
18.3L*	5.41 (5.10*)	3.53

* after James (1985)

As mentioned before, the primary objective of potters supplying the vast needs of the flotas was speed and quantity. These were the overriding factors in construction of the jars. Since we find evidence of poor quality jars in use with several flaws, it seems only natural that a fairly wide degree of variation would exist in the capacities of the finished jars. While taking into account unintentional variation, the analysis of capacities of jars encountered in this study has identified some interesting points for discussion.

The analysis begins with the end of the 16th century, although there is only a small sample from which to draw conclusions. Capacities for both the **Type A** and **Type B** are represented by only two examples each. The two **Type A** jars vary in size by only a little more than half a litre (.7 L) or by about 4 %. The average is 17.85 litres. Speculating that the **Type A** jars were intended for wine and not oil (Martin, 1979:284) and by using simple logic, we can say that they are both capable of holding the Castilian wine *arroba* of 16.133 litres (*Enciclopedia Universal Ilustrada*, VI, 1910:424; from Martin, 1979:284). Using the approach of whether the jars are capable of holding a known measure seems more logical than trying to exactly define the volume of the jars.

Authors have attempted to more closely define capacities and have questioned past work describing *botijaperuleras* (**Type A**) as holding 1.5 or 1.25 *arrobas* (James, 1988: 62, from García Fuentes, 1980: 243 - 244). Using both variations, James was unable to derive a correlation to a large 18th century assemblage.

There are numerous citations among the Spanish Armada documentation (1588) clearly stating that $1/2$ *arroba botijas* are involved (Martin, 1990: pers. comm.) The two **Type B** *botijas* are both from the *Armada* of 1588. The first one recorded has a capacity

of 6.25 litres “almost exactly half” the capacity of the old Castilian oil *arroba* of 12.56 litres (Martin, 1979:283; from *Enciclopedia Universal Ilustrada*, VI, 1910:424). The second jar recovered later from the *Armada* wrecks (**Fig. 4.10**) is of slightly larger capacity at 7.10 litres, about 12 % larger. Although a much greater difference expressed as a percentage, it holds less than one litre more. Again, it can be said that both jars are capable of holding half the Castilian oil *arroba* volume of 6.25 litres.

In a sample of **Type B** jars from the undated (but possibly late 16th century) Bermuda wrecks, the four jars average 7.51 litres and range from 6.15 litres to 9.2 litres. Without the two extremes, the average is 7.3 litres for the two remaining jars and without the extra-large jar the average for the three jars is 6.9 litres. These capacities are greater than the last half of the 16th century and can hold the $1/2$ *arroba* oil capacity. It is important to note how one oversized *botija* can sway an average of a relatively small sample.

In a sample of eight **Type A** jars thought to be from the 16th century, the average is 18.44 litres, with the two extremes being 15.79 litres and 20.9 litres. Without the two extremes, the average is a close 18.47 litres. The average and adjusted average of the jars is larger than the group representing the first half of the 17th century, it may prove that the average **Type A** jars decreased during the 17th century.

The first half of the 17th century is represented by 11 securely dated **Type A** *botija peruleras* which range in size between 14.46 litres and 21.4 litres. With the two extreme measures included, the average is 17.04 litres which again is capable of holding the Castilian wine *arroba*. Without the two extremes, the average of the remaining 9 jars is 16.84 litres, closer to the exact 16.133 litres wine *arroba*. Two jars presumed to be from a 1695 context, are substantially smaller than earlier examples with the two capacities recorded at 13.73 litres and 13.7 litres. Perhaps these were intended to hold

the Castilian oil *arroba* of 12.56 litres.

The **Type B** *botijas* of the first half of the 17th century are represented by 7 samples ranging from 5.00 litres to 6.60 litres averaging 5.91 litres for the group. Without the two extremes the average is still only 5.96 litres, below the 6.25 litre $1/2$ *arroba* oil volume associated with the late 16th century jars. Here again it is possible that average volume may have temporal significance. The *botija* has been listed as a measure in itself with the volumes ranging from 5 to 8 litres (Lister and Lister, 1987: 355). It is also possible that with a small sample, the jars recovered may be inaccurately representing intended capacities of the **Type B** jars.

The two **Type B** jars recorded from the purported 1695 wreck measure 5.71 litres and 5.18 litres, averaging 5.46 litres, which is not capable of holding the $1/2$ *arroba* capacity. Their smaller capacities are more closely comparable to examples from the early 18th century and this may be of temporal significance.

Included in the samples from the first half of the 17th century are three small **Type C** conical *botijas* or *botijuelas*. They range from 1.72 litres to 2.74 litres from the same provenience. The third **Type C** jar from another wreck falls exactly in the middle of the two volumes at 2.18 litres. The small **Type C** jars are unique to the first half of the 17th century and the only corresponding volume is possibly that of the old Cuban *cuartilla* of 2.28 litres (from a list of measures by Lyon, 1986: letter on file).

The study of volumes from the first half of the 18th century has been handed a grand opportunity by the recovery of the cargos of the galleons of the *Tolosá* and *Guadalupe* (1724). The original recording of forms and volumes was conducted by James in 1985 in the Dominican Republic. His list of recorded volumes has recently been

published (1988: 43 - 66). Due to the physical restrictions at the time of my visit to Museo Casas Reales in the Dominican Republic, however, it was only possible to record three volumes of the **Type A** *botijas peruleras*. Nevertheless, a new interpretation of the volumes can be reached by re-examining James' recordings.

Of the sample of 18 **Type A** jars measured by James, 12 capacities were recorded (1988: 50, Table 1). Volumes of the 12 ranged from 15 to 20.1 litres (ibid.:48) with the average from his sample at 18.30 litres. Excluding the extremes we get an average of 18.45 litres with both averages about 7 1/2 % larger than volumes from the first half of the 17th century. Although there is no exact correlation, they still can comfortably hold the 16.133 litre Castilian wine *arroba*. The undeniable increase in average size between the **Type A** jars from the first half of the 17th century and the first half of the 18th century may be a temporal indicator. As mentioned before, there are also distinct differences in the manufacture of **Type A** rims beginning in the early 18th century.

Using a straight count of surviving whole jars from the 1724 assemblage it is interesting to note that glazing of the 18th century sample for **Type A** jars was calculated at 53 % (ibid.:50), although from the tables provided it is not possible to determine if there was any correlation between capacity and glaze. James also approaches the topic of capacity without considering the possibility that it may have varied with time, as his conclusions tend to speak for all *botijas*.

The largest sample yet recorded is that of the **Type B** jars from an the early 18th century context of the *Tolosá* and *Guadalupe*. Three random jars chosen for recording ranged from 4.46 litres to 5.89 litres with an average of 5.41 litres. Of the 44 examples measured by James, 43 were recorded for capacity (ibid.). Such a large sample offers a more accurate estimate of intended capacities. The average of the James sample is 5.10

litres, close to my random selection of three at 5.41 litres. This early 18th century average is nearly identical to the capacities of the **Type B** jars thought to date to 1695. Only two of the jars recorded from wrecks dated to the middle and early 17th century are close to the 5.10 litre capacity. Because 5.10 litres is not capable of holding the 6.25 litre $1/2$ *arroba* Castilian oil capacity, it is probable that there was a change in measure or intended volume for the late 17th century and early 18th century jars. This may be considered an important temporal indicator in itself.

When reviewing measures from various sources (Lyon, letter on file.; Listers, 1988: 353 - 362; Martin, 1979: 283,284; James, 1988: 62) a few possibilities arise for the smaller intended capacities. Measures appear to have changed slightly with the passage of time, possibly to better suit their current environments. It has also been noted that there are different definitions for measures in Cuba for example, as opposed to Spain (Lyon, *ibid.*). Using the combined resources of the authors mentioned, a few possibilities for the early 18th century **Type B** *botijas* appear.

Lyon's "Modern" equivalents of Spanish measures list *cuartilla* as a measure that equals $1/2$ an *arroba* (Lyon, 1986: letter on file), and the Listers report that a *cuartilla* equals 4.03 litres and is a measure frequently used for olive oil (1987: 356). Using the *cuartilla* of the Listers and the $1/2$ *arroba* *cuartilla* equivalent of Lyon we get a $1/2$ *arroba* of 4.03 litres which makes the 5.10 litre average of the 18th century **Type B** jars capable of holding that quantity with few exceptions. Using the old Cuban measure for *cuartilla* of 2.28 litres (Lyon, *ibid.*) and the "modern" equivalent of 4 *cuartillas* equalling one *arroba*, half a Cuban *arroba* would then equal 4.56 litres which is even closer to the 5.10 average. The actual capacities of the jars measure slightly more than 10% larger than the extrapolated Cuban *arroba* of 4.56 litres, a variance similar to the differences between the actual capacities of the **Type A** jars and historical volumes.

Three **Type B** specimens from the 1733 Wrecks recorded by Goggin have capacities of 6.56 L, 3.80 L, and 3.81L (1960: 14). One of the examples can hold the standard 1/2 *arroba* while the two smaller are closer to the "*cuartilla*" size. The sample is ten years later than the wrecks of the *Tolosá* and *Guadalupe* (1724) and may suggest jars were adapted for different commodities based on different measures, or a return to old standards.

A new type recorded by James found on the wrecks of the *Tolosá* and *Guadalupe* is his **Form III** (James, 1988: 54). Averaging 7.73 litres, James has divided the group into two different sizes: large and small (*ibid.*). They are closer in size to **Type B** jars although with different rims and a concave base. Examples were not located when this researcher visited the repository for the jars.

Of the large **Type C** jars recovered in the early 18th century, the four examples recorded have a tight range of 3.46 litres and 3.78 litres with an average of 3.53 litres. The James sample (*ibid.*:56) of 14 recorded volumes have an average of 3.46 litres. The sizes and capacities of the 18th century **Type C** conical jars are much larger than the early 17th century samples (by about 40 %) and thus serve as another important temporal indicator.

From the samples discussed, a rough pattern is emerging which will undoubtedly be refined as more assemblages are reviewed. From the late 16th century to the early 17th century, the **Type A** *botija peruleras* can be associated with the Castilian wine *arroba* of 16.13 litres with average sizes about 10 % greater than the actual measure. Moving to the middle of the 17th century and into the first half of the 18th century, capacities of the jars increase by only about 5 %. The only exceptions are the two jars from the Spanish

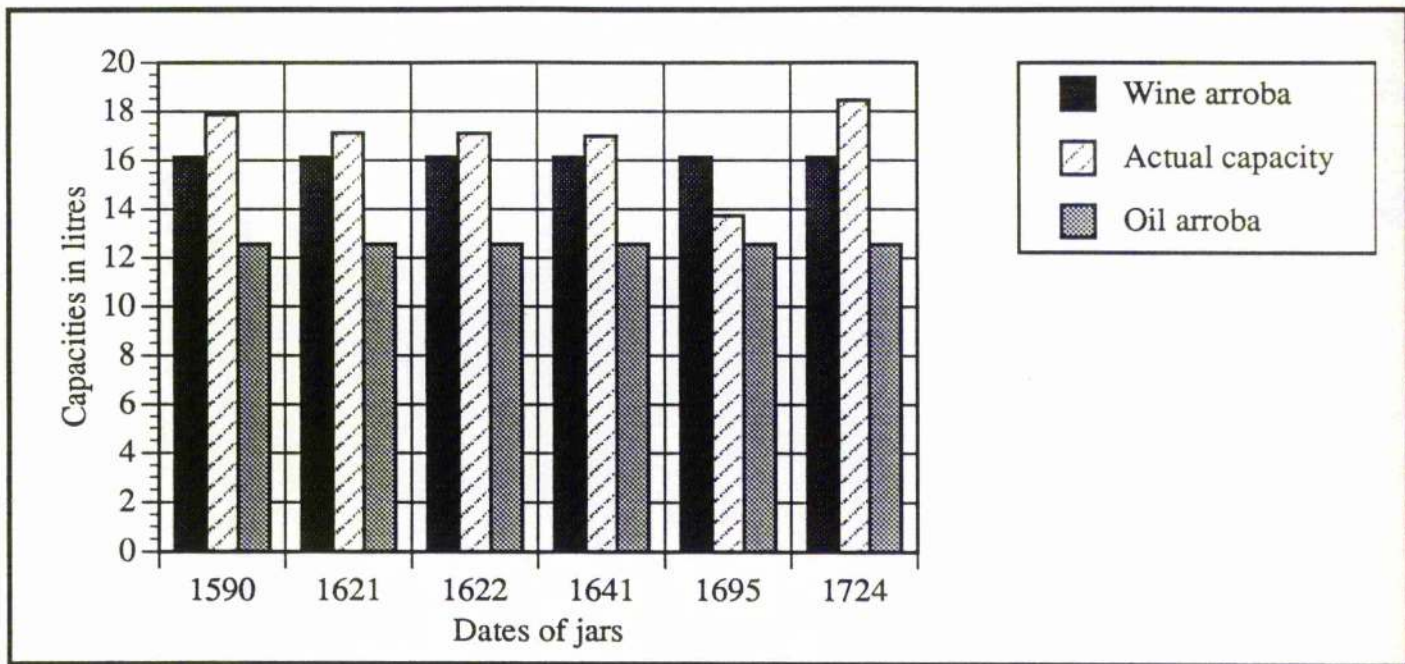


Fig. 4.97. Type A, botija perulera, volumes and measures.

wreck of 1695 with volumes averaging 13.72 litres. Because the date and identity of the wreck are uncertain, and the volumes do not fit the established pattern, using the examples as representative of the latter half of the 17th century should be viewed with caution. The 1695 jars do, however, measure close to 10% larger than the Castilian oil *arroba* of 12.56 litres and would hold that measure comfortably. Throughout the period in question, the remaining **Type A** jars are all generally capable of holding the Castilian wine *arroba* of 16.133 litres.

The **Type B** jars at the end of the 16th century “fit nicely” (Martin, 1979) into the older $\frac{1}{2}$ *arroba* Castilian oil measure of 6.25 litres. The early 17th century **Type B** examples seem to average slightly less than the 6.25 litre capacity at 6.06 and may suggest that a different measure was intended, although both samples (16th and 17th century) are relatively small samples. The **Type B** 18th century samples are significantly smaller in capacity than earlier examples and it is unlikely that their intended capacity was aimed at the Castilian oil $\frac{1}{2}$ *arroba* measure. A more likely target may have been associated with the *cuartilla* of 4.03 litres (Listers, *ibid.*) also used as a modern equivalent meaning

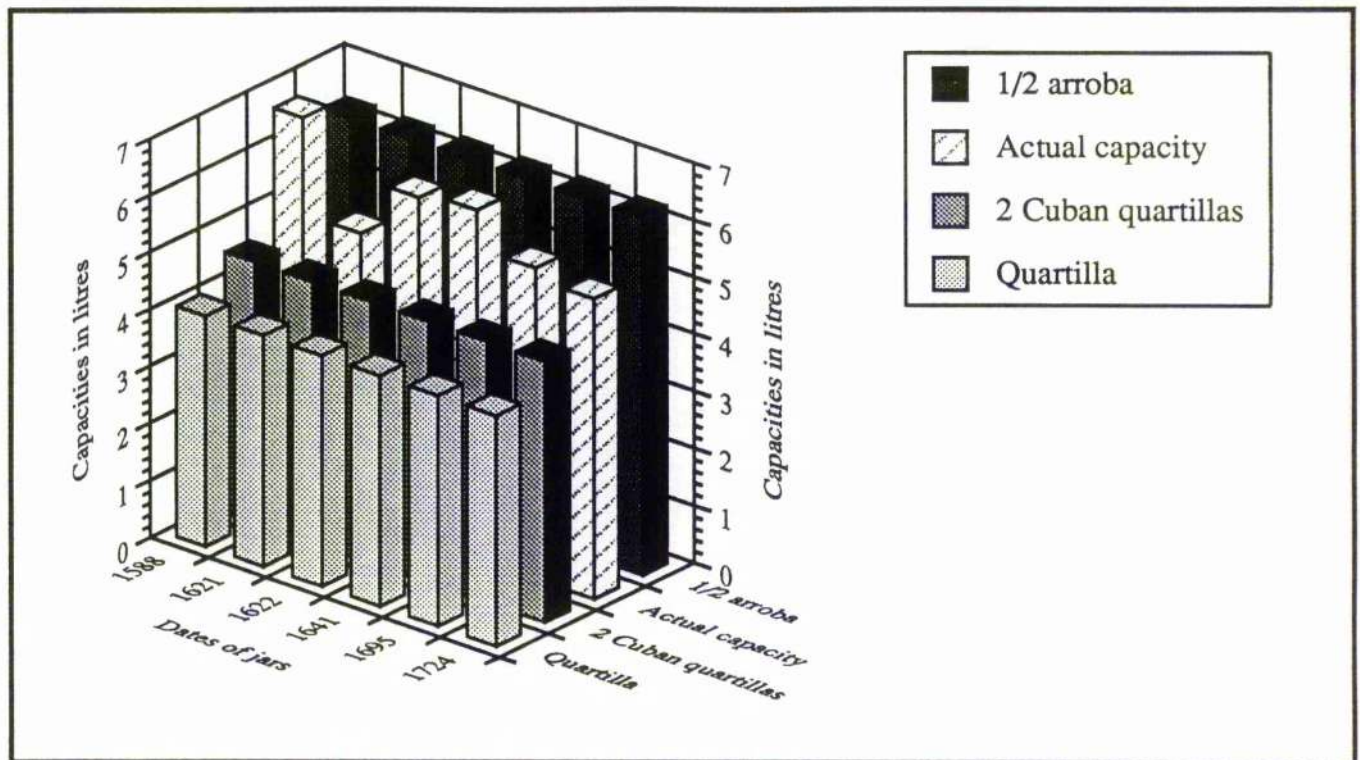


Figure 4.98. 1/2 arroba botija volumes.

a 1/2 arroba (Lyon, *ibid.*). **Type C** conical *botija* volumes change dramatically over time with the early 17th century jars averaging 2.18 litres compared to the early 18th century average of 3.46 litres.

As more colonial era shipwrecks are recovered and larger sample groups are statistically quantified, the picture will become clearer. At the present time, complicated approaches seem unnecessary in attempting to piece together the puzzle. Quickly fabricated hand made pottery will never fit exactly into precisely defined measuring standards. The fact that the jars are so close in size at all pays great tribute to the skill of the potters. The absence of a full body mould for exact duplication suggests that rough guidelines were sufficient for containing the commodities.

TYPOLOGICAL SUMMARY

The review of jars in this study have focused primarily on the broad time range established by Goggin and associated with his "Middle Style". The study begins with finds from the first Spanish wrecks recovered in the Americas dated to the middle of the 16th century, over 50 years after colonisation began. Absence of intact jars and large quantities of sherds (the sherds are definitely in evidence) from the three Padré Island wrecks of 1554 may indicate that Middle Style jars were just beginning to replace earlier types of containers made from different materials. The one surviving rim sample is a distinct type (**Type 2**) and may be a transitional form.

It is believed that the forms did not suddenly appear, but are the lineal descendants of the long traditions of amphoras existing in the Mediterranean, although the forms were probably adapted to suit the changing requirements and needs of the colonists and may also reflect elements of state control. The enormous quantities of *olive jar-type botija* material which characterise wrecks associated with Spanish trade to the Indies do not begin to appear until the early part of the 17th century.

TYPE A JARS : *BOTIJAS PERULERAS*

The following **Fig. 4.99** shows comparisons of actual **Type A** jars recovered from wrecks from the late 16th century to the 18th century. All jars appear to have been manufactured in the same general fashion. But while they may look similar to the unpracticed eye subtle variations make temporal identifications possible. Many of the jars' characteristics overlap time periods and it has been established that dating criteria are more accurate when several factors are used to qualify the jars.

In comparing known forms from dateable wrecks, the **Type A** jars from the 16th century context appear more squat than the later jars, and are more smooth. The two examples recovered from a single context make generalisations of the forms during this time period unsafe. Specific lack of **Type A** examples from the Padré Island wrecks of 1554 and the Spanish Armada of 1588 may imply that **Type A** jars were not utilised in as great quantities in the 16th century as in later times. Of the jars recovered, the rims (with the exception of the Padré Island example) are similar to those of the early 17th century, all exhibiting **Type 3** construction. The examples do not show evidence of any glaze. Capacities average over half the amount of the Castilian wine arroba of 16. 133 litres with the average of the two at 17.85 litres.

Type A jars of the early 17th century are more numerous and generalisations can be made about recurring characteristics. They are more tapered than the earlier and later jars, and bear semi-triangular **Type 3** rim constructions. No examples were recorded with glazes of any kind and most exhibit a "white slip" appearance. The interiors are often coated with pitch, and several examples appeared to be filled with pitch. Pitch in conjunction with natural corks were used as the method of sealing. This practice is evident throughout the period in question. Clay preparation is often inadequate with jars frequently revealing bubbles and deformities. Care and attention to detail in the manufacturing process is often disregarded and the jars are generally more sloppy than in earlier and later periods.

Rim markings have only been encountered on jars from a pre-1650 context and seem to be an important temporal indicator. Because collections from wrecks dating to the last half of the 17th century are not yet available for study, it is not known when the practice died out. The large collections from wrecks of the early 18th century are devoid of any markings. Shoulder markings, incised as opposed to stamped, also occur on jars from the

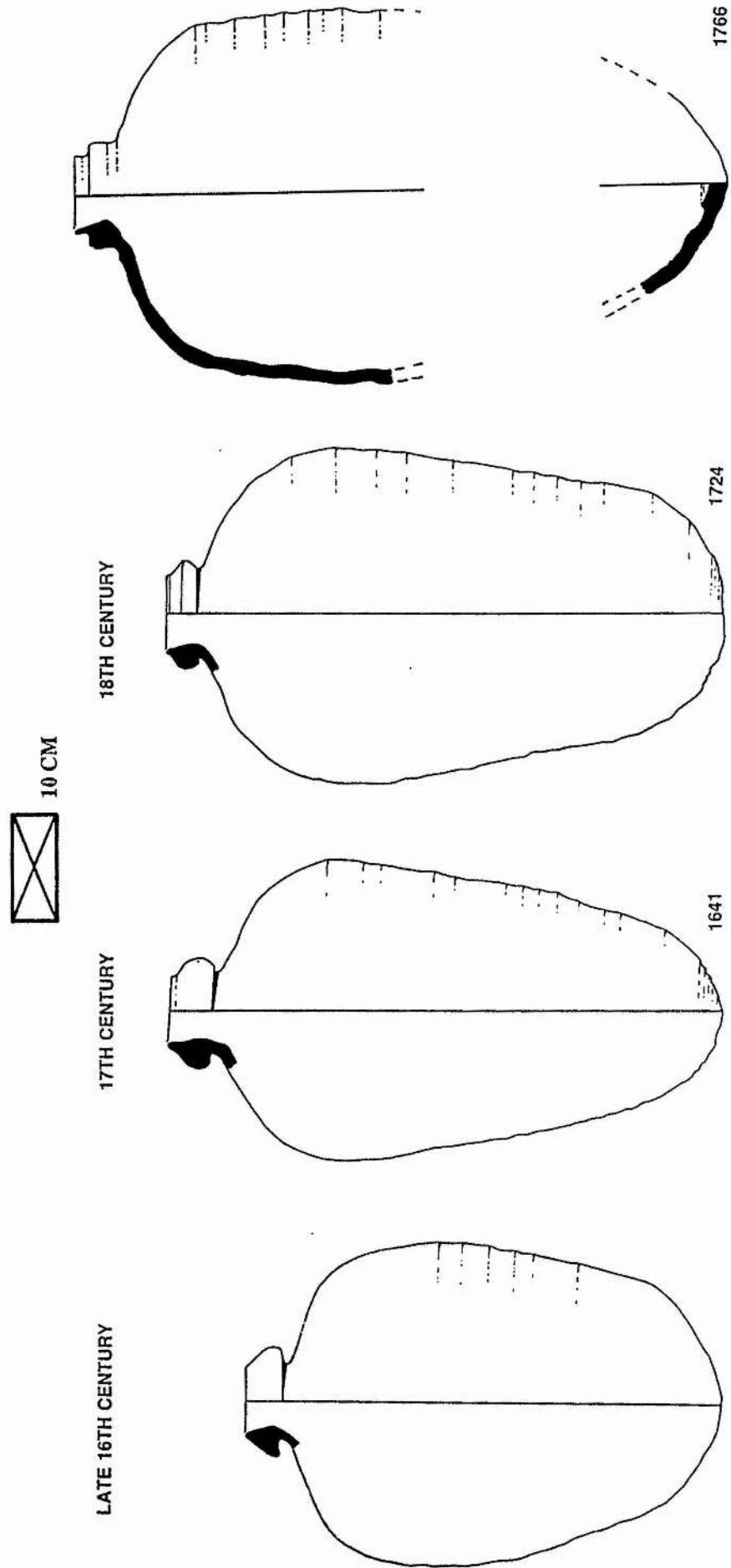


Fig. 4. 99. Type A olive jar-type botija form changes.

early 17th century. Capacities from securely dated wrecks average 17.04 litres and are large enough to accommodate the Castilian wine *arroba* of 16.133 litres. Also included in early 17th century contexts is a new form identified as a *flat-bottomed olive jar-type botija*.

The jars studied from the 18th century are also represented by a large enough sample to generalise and validate conclusions. The **Type A** jars are slightly larger than earlier examples and have a broader shoulder appearance with less of a tapered shape than jars from the early 17th century. Glazing is frequent and the clay is better prepared resulting in fewer aberrations. Paste is similar although it generally appears denser. Manufacturing processes are the same as earlier for examples with the exception of the technique applied to the rims.

All **Type A** jars observed from 18th century contexts display the **Type 4** rim construction technique with normal variations that one might expect from hand made pottery. Although there is still little attention paid to detail, the jars exhibit a more uniform appearance and look more similar to each other than jars from earlier contexts. The **Type A** jars recovered from the wrecks of the *Tolosá* and *Guadalupe* (1724) are not as numerous as the **Type B** jars which appears to be the opposite case in early 17th century contexts. Because of the nature of the recoveries, however, quantifications of this nature may only coincidentally reflect the actual occurrences. A notable missing factor for 18th century jars is the absence of marks on the jars. Glazing occurs on jars from late 16th century contexts, and in early 18th century examples, but is noticeably absent on all 17th century finds.

The jar form seems to have changed by the end of the 18th century as examples from the wreck of *El Nuevo Constante* (1766) clearly exhibit a previously unrecorded rim

style, called **Type 6**. The form's shoulder is decidedly more sloped giving the vessel a more conical appearance. The **Type A** jars, as described here, are also not found on the early 19th century wreck of the *Elizabeth* (1812)(Henderson, 1973). Omission from the collection of the *El Nuevo Constante* and the *Elizabeth* suggests that the type was phased out around the middle of the 18th century.

TYPE B JARS (1/2 ARROBA BOTIJAS)

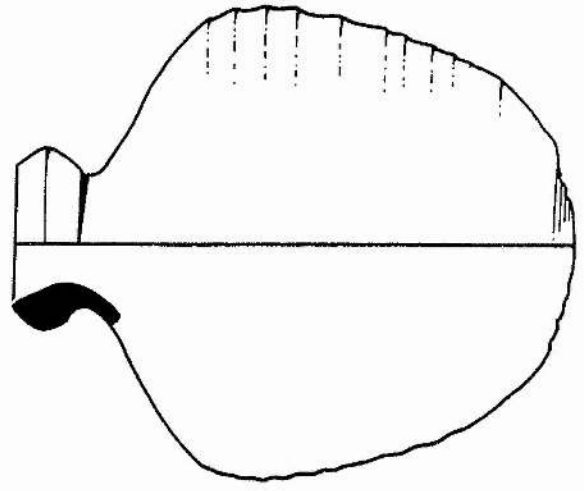
The following **Fig. 4.100** shows actual examples of **Type B** jars recovered from the end of the 16th century to the early 18th century. **Type B** is the most similar in form and casual observation might suggest that there is little or no form change throughout the period in question. The jars from the 16th century and early 17th century contexts bear a remarkable similarity although a primary difference is the presence of glaze observed only on jars from the 16th century and 18th centuries.

The rim forms are both **Type 3** with the earlier examples showing a slightly more semi-triangular form than the later examples. Semi-triangular forms exist in the early 17th century assemblages, although there are also examples with a more circular smoothed appearance. Average capacity for the late 16th century examples is 6.67 litres which can hold the Castilian oil measure of one half *arroba* at around 6.25 litres. Jars from the early 17th century, however, average 5.9 litres with few capable of holding the 1/2 *arroba* measure. The average from the 16th century may not be representative of the jars due to the relatively small sample (2 jars) but it has been suggested that since the jars were recovered from the Spanish Armada of 1588 that they may be "official" jars associated with the official supplying of the Armada (Martin, 1979).

Beginning with the wreck of the *Concepción* (1641) the **Type B** jars appear a bit smaller and have a more exaggerated sloping of the shoulder. The rims, although still

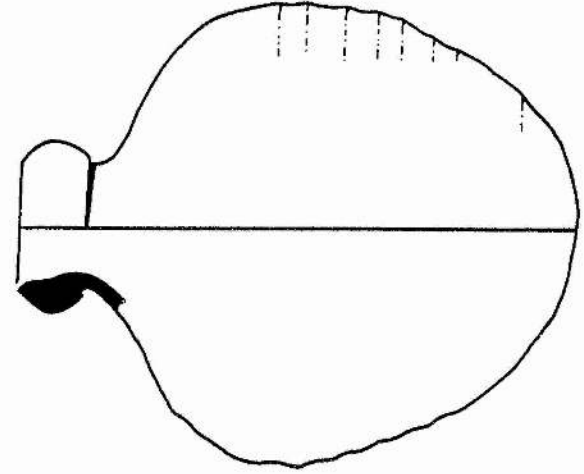
18TH CENTURY

1724

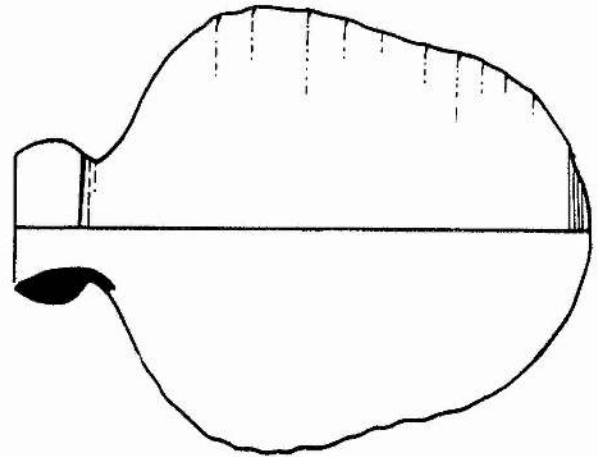


17TH CENTURY

1641



1621



LATE 16TH CENTURY

1588

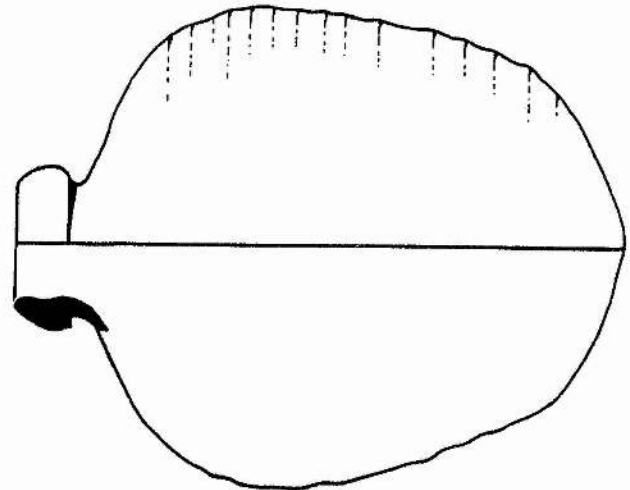
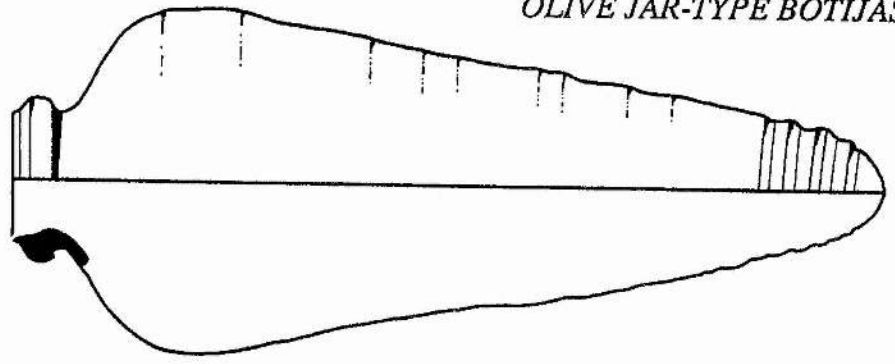


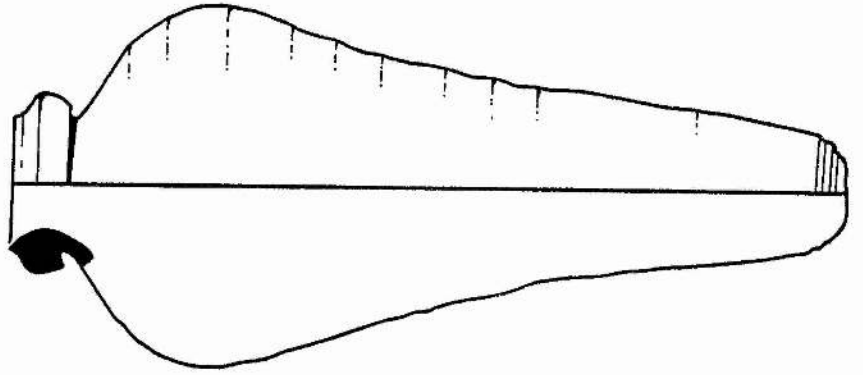
Fig. 4.100. Type B forms from the 16th to the 18th century. Scale 1/4.

18TH CENTURY

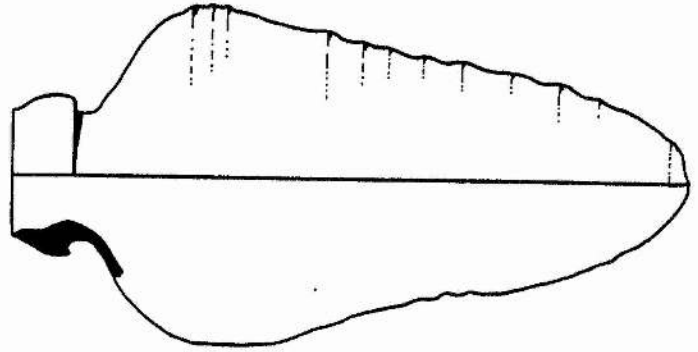
1724



1724

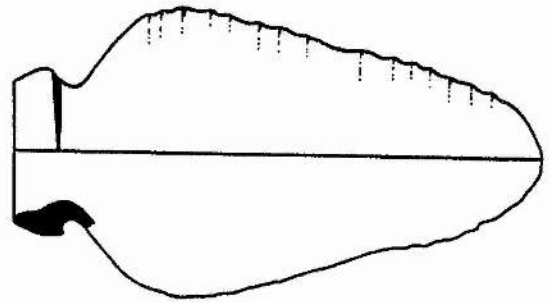


1622



17TH CENTURY

1622



1621

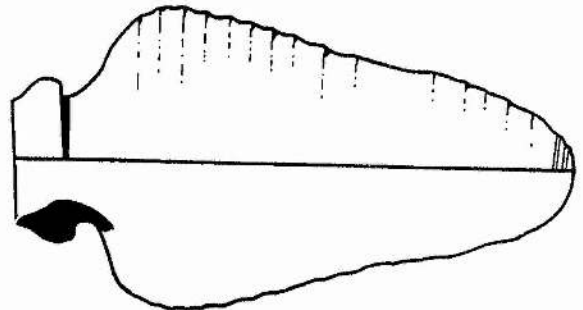


Fig. 4.101. Type C forms from the 17th to the 18th century. Scale 1/4.

Type 3, have a more definitive smoothed semi-circle form. Glazing is still not apparent on any jars from 17th century contexts. Jars from the 18th century also exhibit a more sloped shoulder appearance. The rims, however, show a more defined semi-circle form with evidence of a ridge in the middle of the half circle. The jars from the 18th century also have a high incidence of glazing (see James, 1988).

A **Type B** jar recovered from the river Rance and recorded by Langouet (1973: 2; example C1), however, was recovered with an assemblage of **Type A** jars which clearly exhibit characteristics of early 18th century jars yet the **Type B** example lacks the sharp sloping shoulder one would normally associate with jars from an early 18th century context. Although the Rance assemblage lacks a secure date, caution is advised in attempting to assign dates to **Type B** forms alone. Combining the attributes of the sloping shoulder and the ridged half-circle, **Type 3** rims may prove to be an aid in differentiating time periods. Another possible clue is the smaller average capacity of the 18th century jars at 5.10 litres which may indicate a change in the jar's intended measure.

As discussed previously, the concave-bottomed small *botija* with a **Type 4** rim has only been recorded in early 18th century contexts (see James, 1988).

TYPE C: CONICAL BOTIJAS, BOTIJUELAS

The preceding Fig.4.101 shows the dramatic evolution of the conical *botijas* called **Type C**. The first recorded examples are from two securely dated early 17th century wrecks. The small jars of the 17th century have **Type 3** rims and have not been recorded with any glaze. Suggested uses has been for honey and possibly torches although the rims are all fashioned for cork closures. **Type C** jars are relatively sparse in the early 17th century. Their average capacity (of the three recorded) is 2.18 litres.

Jars from the early 18th century are decidedly larger and are often glazed. The rims are **Type 4** with some evidence of tooling. The body form is a much more exaggerated cone with sides curving inwards sharply in some instances and fairly straight sides in others. Differentiating the early 17th century examples from the early 18th century examples can be easily achieved using rim form, body size, shape, and glaze.

The **Type A**, and **Type B** may have been phased out by the second half of the 18th century, being replaced by later styles, as evidenced by finds from the *El Nuevo Constante* (1766). The addition of a new rim form, **Type 6**, also commences with one example from the 1766 wreck and is also present on the jars from the 1839 wreck of the *Elizabeth*. The **Type C** form seems to have changed dramatically in the 19th century, and has a shape which corresponds to Goggin's Late Style Shape D (1960: 18) adopting an exaggerated wider shoulder sharply curving into a narrow base.

Although many questions remain unanswered, the finds from securely dated wrecks spaced throughout an important time in Spain's colonial history have opened a window on one of man's oldest and most enduring traditions. *Olive jar-type botijas* brought the luxuries of home to a growing society dependent on the motherland. The jars were a continuance of a tradition that had existed for centuries. They changed as the needs, tastes, and requirements of colonisation evolved. A slow bureaucratic process, and a resistance to change can be seen in some of the forms, while others exhibit features of adaptive evolution.

OLIVE JAR-TYPE BOTIJA ATTRIBUTES FROM THE 16TH THROUGH THE 18TH CENTURY

NA = NO COLLECTIONS AVAILABLE, NR = NONE RECORDED

TYPE A : BOTIJAS PERULERAS

<u>DATE</u>	<u>RIM TYPE</u>	<u>MARKS</u>	<u>GLAZE</u>	<u>AV. VOL.</u>	<u>CHARACTERISTICS</u>
Early 16th c.	NA	NA	NA	NA	NA
Mid. 16th c.	NR	NR	NR	NR	NR
Late 16th c.	3	incised	NO	17.85 L	rounded shoulders, less tapered, more smoothed, only 1 incised mark if any
Early 17th c.	3	YES	NO	17.08 L	more tapered shoulders, incised shoulder marks, stamped & incised rim marks
*** Flat bottomed olive jar-type botijas with Type 5 rims occur only in the early 17th century ***					
Mid. 17th c.	3	YES	NO	16.98 L	a little less tapered shoulders, stamped marks on rims
Late 17th c.	3 w/lip defined	NO	NO	13.7 L	tapered and smaller, dated sample is not concrete
Early 18th c.	4 only	NO	YES	18.3 L	larger with broader shoulders, less tapered, more compact paste
Mid. 18th c.	6 & 4	NR	YES	NR	Goggin's Late Style C may have replaced it using 1766 wreck finds
Late 18th c.	NA	NA	NA	NA	
Early 19th c.	6	NR	NO	NR	Goggin's Late Style D reported on wreck from 1839

TYPE B : 1/2 ARROBA BOTIJAS

<u>DATE</u>	<u>RIM TYPE</u>	<u>MARKS</u>	<u>GLAZE</u>	<u>AV. VOL.</u>	<u>CHARACTERISTICS</u>
Early 16th c.	NA	NA	NA	NA	
Mid. 16th c.	2 possibly	NO	YES	NA	only one rim was recorded, it was reported that Type 1 rims were present
Late 16th c.	3	NO	YES	6.67 L	sloping shoulders, rims are more semi-triangular, one poss. Type 1 rim
Early 17th c.	3	NO	NO	5.65 L	rounded shoulders, one almost globular, one rim semi-circular
Mid. 17th c.	3	NO	NO	6.11 L	rounded shoulders, one with slight shoulder angle
Late 17th c.	3	NO	NO	5.43 L	semi-circular rims, one with rounded shoulders and one with a sharper angle
Early 18th c.	3	NO	YES	5.10 L	all semi-circular rims, sharper angles on shoulders
Mid. 18th c.	NR	NR	NR	NR	
Late 18th c.	NR	NR	NR	NR	
Early 19th c.	NR	NR	NR	NR	

TYPE C: CONICAL BOTIJAS

<u>DATE</u>	<u>RIM TYPE</u>	<u>MARKS</u>	<u>GLAZE</u>	<u>AV. VOL.</u>	<u>CHARACTERISTICS</u>
Early 16th c.	NA	NA	NA	NA	
Mid. 16th c.	NR	NR	NR	NR	
Late 16th c.	NR	NR	NR	NR	
Early 17th c.	3	NO	NO	2.18 L	small cone shape with distigishable shoulders curving in to narrow base
Mid. 17th c.	NR	NR	NR	NR	
Late 17th c.	NR	NR	NR	NR	
Early 18th c.	4	NO	YES	3.53 L	large cone shape angling to a narrow base
Mid. 18th c.	NR	NR	NR	NR	
Late 18th c.	NA	NA	NA	NA	
Early 19th c.	6	NR	NO	NR	may have been replaced by Goggin's Late Style Type D

COLUMBIA PLAIN

INTRODUCTION

The second most common ceramic tradition encountered on Spanish shipwrecks and colonial land sites is the *Columbia Plain* type tin glazed earthenware. Originally identified by Goggin, it derives its type name from the Fig Springs site in Columbia County, Florida, USA where it was first encountered by him (1960: 126). It has been classified as part of the *Morisco Ware* group (Lister and Lister, 1982: 48) which includes four types and one variant sharing similar paste attributes (ibid.: 45) directly associated with Spanish *majolicas* produced in and around Seville from the 16th century to the 18th centuries.

Columbia Plain paste is generally buff-white with fine mineral inclusions, sometimes gritty, with pink to grey-brown core. It is characterised by its white tin glazed enamel with occasional additions of green glaze. Other characteristics of the fabric are the use of a light firing paste that appears pale yellow to orange in reflected light, is comparatively free of iron having a relatively high calcium content, and a granular clay texture when viewed in cross-section (Lister and Lister, 1982: 45). Vessel walls are usually thick with evidence of rapid production and the glazes are hastily applied. As the paste is indeed so similar to *majolicas* produced in Andalusia, sherds and partial vessels with slight traces of tin glaze may be easily classified as *Columbia Plain* when in fact they may be *majolica*, or vice versa.

A key attribute which can be used for differentiating the ware from *majolica* is the thicker walls and cruder construction of vessels. Because *Columbia Plain* served as the common everyday utilitarian ceramics, slight imperfections are common with little attention paid to aesthetic details. The most common forms are plates (*platos*) and

carinated drinking bowls (*escudillas*).

The *platos* are thick-walled flaring plates without flattened rims, everting at a consistent angle from a countersunk base. The interiors are distinguished by an obverse ridge near a central boss or slightly raised circular hump in the central interior base (Lister and Lister, 1982: 48, 108). The central hump, however, was not encountered in the majority of the samples recorded for this study and seems to be a good temporal indicator. The *escudillas* are small drinking bowls with almost straight sides which turn sharply inward (carinate) to either a ring footed or concave base.

A characteristic often found on the *platos* and *escudillas* is the pronounced triple firing scars on the interiors and exteriors (three spots around the interior bottom of the plate and on the exterior base) caused from spacers used to keep the wares separated while stacked in the kiln. Disregard for the appearance of the scars supports the contention that the ware was utilitarian and produced in great quantities. In addition to the characteristic *platos* and *escudillas*, other forms encountered in this study include large serving bowls(flat bottomed, or with ring foot bases), serving plates, small pitchers, mortars, and one chamber pot.

Manufacture of the ware, like that of the *olive jar-type botijas*, was geared toward producing large quantities. The *platos* were most likely thrown upside down over a mould or *jigger* attached to the wheel head with the outside formed or trimmed with a template or *jolly* (Martin, 1979: 286 after Leach, 1976: 95 and Billington, 1962: 101; Lister and Lister, 1987: 108). This method is still in existence and has been recorded by the Listers in contemporary Granadine work (ibid. 109). Some exteriors may have been smoothed by the potters' hands which may prove to be a temporal indicator, and is discussed later. This technique would create a standardised *plato* form that would

remain fairly consistent until the mould was discarded or styles changed.

The *escudillas* may have been produced in a similar fashion (upside down over a mould) or it has been suggested that a faster way to produce the vessels would have been a method called throwing "off the hump" (Lister and Lister, 1987: 109). This method involves using a large mass of clay revolving on the wheel head and forming one vessel after the other from the same chunk of clay (*ibid.*). When the bowls were leather-hard the potter could then re-center them on the wheel upside down, to be trimmed with an angled tool producing the carination leading to a ring-footed or countersunk base (*ibid.*). This method would result in a fairly consistent exterior shape with a variable interior curve. Using a mould for the interior however, would result in a more consistent interior profile. Some bowls were then given two vertical raised "T" shaped handles or horizontal lugs with scalloped edges added for porringers (*ibid.*).

Columbia Plain was most likely produced in quantity in Triana, the pottery making suburb of Seville, where it would be easily accessible for supplying the outward bound *flotas* (Goggin: 1960,125). Physical analysis has determined that wares recovered from around the Seville area compared to examples recovered in the Caribbean came from the same source (Lister and Lister, 1982: 45 after Olin, Harbottle, and Sayre, 1978: 216) known to be located some miles west of Seville (*ibid.*). Although a few examples exist throughout Andalusia, Goggin points out that the only significant surviving intact examples of the ware (14 whole *platos* and *escudillas*) are housed in the Museo Arqueologica Provincial at Seville which supports a Seville origin (*ibid.*)

Because of the tight economic controls in the early days of colonisation, it is probable that the first colonists depended on the importation of most of the basic household items including everyday pottery. *Columbia Plain* was the type of ware that would be used to

outfit the ship's galley and as basic tableware for the crew. As most outfitting of ships engaged in *flota* service were provisioned in the official port of Seville, physical evidence of the ware recovered from wrecks associated with trans-Atlantic service would be expected.

In a list of supplies for the *Nuestra Señora de la Concepción* from the 1554 fleet it was recorded that the "earthen ware consisted of funnels, jars, three dozen pitchers, 10 dozen plates and a like number of soup plates, as well as 8 dozen white plates, 4 dozen large bowls, and 6 white jars, contained in willow baskets." (Arnold and Weddle, 1978: 87). Other ship registers note the wares as part of the outbound cargo. In 1590, for example, a box of *lozo blanco de Sevilla* was carried in addition to 200 *vasos de loza blanca de Triana* and in 1592 - 1593, 50 *vasos* of *laza basta de Triana* and *loza blanco hecho en Sevilla* were included as cargo (Goggin, 1968: 125, from A.G.I., Contratacion, 1091; ship Santa Catalina; Master Rodrigo Maders; A.G.I., Contratacion, 1099, ship N.S. de la Asuncion, Master Gaspar de Rojas; A.G.I., Contratacion, 1099, ship N.S. del Rosario, Master Luis de Herrera). Colin Martin has also uncovered evidence of the ware in a 1579 *flota* price list which recorded *loza de Triana* at the "remarkably low price" of 43 maravedis per dozen from which he calculated that 28 pieces would sell for about the same price as a pair of shoes (1979, 286).

Examples of *Columbia Plain* can also be seen in Spanish contemporary still lifes by early 17th century artists, specifically the works of Velázquez, Zubarán, and Murillo, all of whom painted in Seville in the early 17th century (Goggin, 1960: 125). Two works by Velázquez entitled *Old Woman Frying Eggs* circa 1618 and *Two Men Eating* circa 1616 - 1617 clearly show examples of *Columbia Plain platos* (Lister and Lister, 1982: 46 figs. 4.1 and 4.2, Goggin, 1960: 125). A *Columbia Plain escudilla* can be seen under the stack of *platos* in *Two Men Eating* (Lister and Lister, 1982: 46 fig. 4.2, Goggin, 1960:

125) and in *The Shepherd* also by Velázquez (Goggin, 1960: 125). The ware's inclusion in scenes depicting common folk affirm that the type was primarily used by everyday Sevillians and gives us the opportunity to understand better the lifestyles of the working class.

Sherds of the ware itself have been difficult to classify temporally as the visual paste characteristics of sherds spanning the two hundred year period in question are hard to distinguish. Like *olive jar-type botijas*, establishing a reliable dating criteria using attributes of the two most common forms has proved difficult for archaeologists. The large collections recovered from shipwrecks, however, have yielded several intact and near intact vessels which have shed some light into stylistic variations which seem to have temporal significance, and may aid in dating. Shipwreck collections have also revealed a wider range of forms than is generally attributed to the type.

All illustrations are at 1/2 scale unless noted otherwise.

EARLY 16TH CENTURY EXAMPLES

Columbia Plain forms, like the *olive jar-type botija's* early amphora origins, had most likely been in existence for some time before they began to appear in colonial contexts. Common forms are probably carryovers from medieval styles (Goggin, 1968: 121, Fairbanks, 1973: 159, Boone, 1984: 78). Moorish influence, after prolonged Muslim occupation of the peninsula (see Lister and Lister, 1987: 3 - 120) would be expected and it has been speculated that many of the 16th century potters were of Moorish origin (Martin, 1979: 286, after Pike, 1972: 9, 161). Although there are no shipwreck collections currently available for study dated to the first half of the 16th century, a notable report of *Columbia Plain* examples has been conducted on 55 near whole *escudillas* recovered from the Portuguese colony of Qsar es-Seghir located at the Strait of Gibraltar, occupied from 1458 through 1550 (Boone, 1984).

Finds from the site yielded a variety of forms associated with the ware and encountered in this study including *platos*, mortars, and *lebrillos* (Redman, 1986: 191). Of the total ceramic assemblage a large quantity (10,000 sherds or about 10%) were *majolica* (Redman, 1986: 191; from Boone, 1984). It is likely that the ceramics recovered from the site were indeed Spanish and shipped from Seville as Portuguese suppliers to the colony were engaged in trade with Andalusian ports (Boone, 1984: 77).

In the *escudilla* study by Boone (1984), the bowls were separated into three principal time periods: the early period ranging from 1458 to 1495, the middle period from after 1495 to before 1520, and the late period from the late 1530's or the 1540's (1984: 81). The date ranges were assigned using site stratigraphy and the presence of coins (*ibid.*) After assigning dates, Boone chose six attributes consisting of rim diameter, base type, glaze type, paste colour, presence or absence of handles, and presence or absence of a green tint (*ibid.* 78 - 81), to evaluate statistically recurring and corresponding characteristics.

Boone's analysis placed the attributes into two general categories: "those that pervade generally either the early or late time period and those that seem tied to a particular variant (such as inset base bowls) or program of manufacture, and are associated with a time frame only secondarily." (*ibid.*: 82). Boone found that glaze and base type are strongly associated with each other with the glossy examples having inset bases and the matt finish examples having ring-foot bases (*ibid.*: 82). Inset bases were found to predominate the early period (1458 - 1495) which supported Goggin's observation (1968:121) and the ring foot bases predominated the late period (late 1530's - 1540's) (*ibid.*: 82).

Handles were found to be associated with inset bowls and associated with the early period while there were no ring foot examples with handles. The presence of green tint was noted throughout the collection with the “pronounced” green tint believed to be an intentional decorative technique most often associated with glossy glaze with two thirds of the pronounced green tint on glossy inset bowls with handles (ibid.: 82). Although paste colour was not shown to have any strong correlation, rim diameters were “highly standardised within base type categories and consequently as a result, within early and late time periods” with early inset-base glossy bowls of 13 cm - 13.5 cm rim diameters consisting of 18% of the collection and later matte finish ring-foot bases of 14 cm - 14.5 cm rim diameters comprising 33% of the collections (ibid.: 83).

The above *escudilla* report clearly demonstrates that stylistic changes can be used

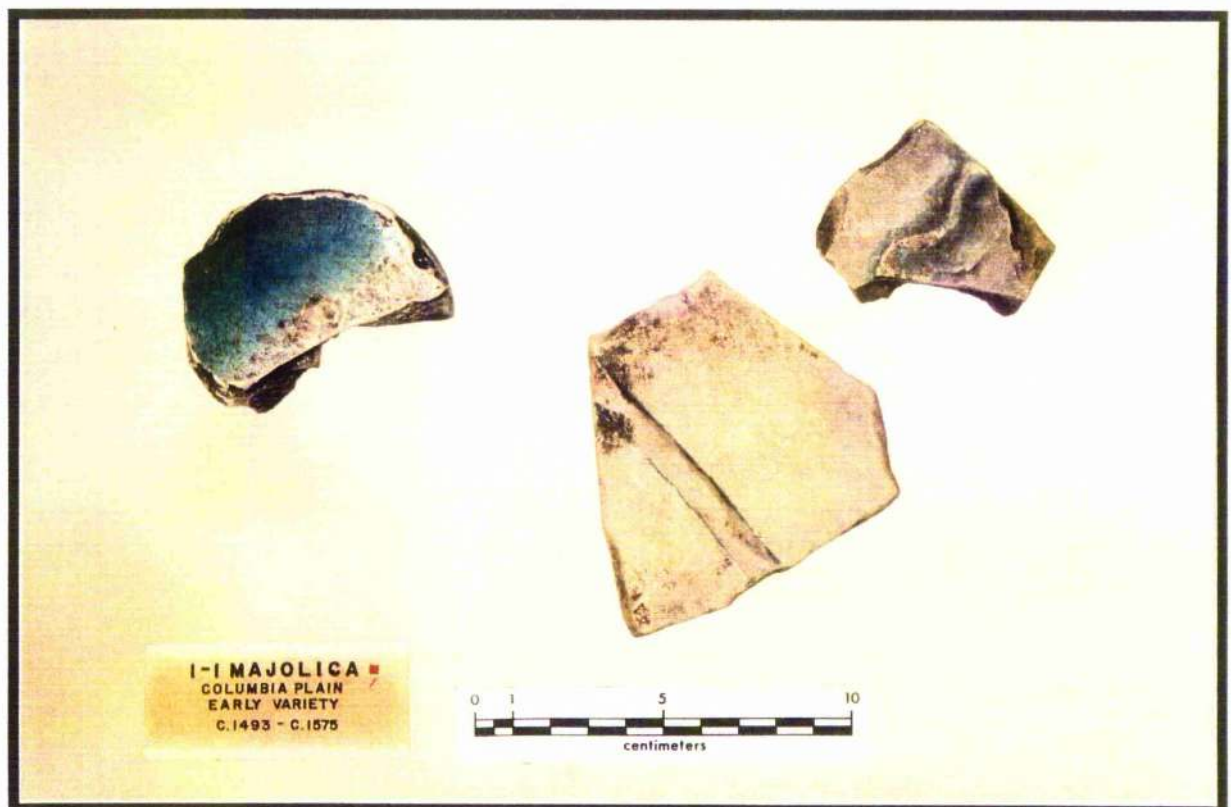


Plate 5.1. Columbia Plain from the 16th century in the Florida State Museum collections.

as temporal indicators, and that even plain everyday wares changed over time. To my knowledge, there are no comparative shipwreck collections bearing *Columbia Plain* collections from before the mid 16th century. The possible exception may prove to be the Studland Bay wreck in southern England, identified as a Spanish trading vessel, dated using recovered ceramics to the period 1475 - 1525 (Hurst, 1985: report on file at the Mary Rose Trust; Portsmouth, England). It is interesting to note, however, that although *majolicas* of Sevillian origin have been recovered from the site, at the time of the report early finds did not include any *Columbia Plain* wares (ibid.). Given the common occurrence of the type it is highly probable that examples will eventually be recovered. ^{**} For the present, Boone's study serves as a valuable starting point in developing attribute associations for *Columbia Plain escudillas*.

^{**} Later excavations on the Studland Bay site in 1987 did reveal examples of *Columbia Plain* (Egan, 1988: 197).

1554 PADRÉ ISLAND WRECKS

The earliest recorded examples of *Columbia Plain* from a Spanish shipwreck in the New World are from the Padré Island shipwrecks of 1554. Finds consisted of examples of *escudillas* and *plato* forms (Skowronek, 1987: 105). A total of 12 sherds were counted by Skowronek (ibid.: 104). A good portion of the collection is now housed at the Corpus Christi Museum in Corpus Christi, Texas, USA. A short visit to the Museum permitted by Dr. Herman Smith was undertaken in 1989. The ceramics from the wrecks were stored in artifact drawers and had not yet been inventoried. During my visit, however, I could not find any of the above reported *Columbia Plain* examples with the exception of one *plato* and one handle sherd.

The one *plato* is included here although two strokes of blue decoration on the interior would make the example qualify as *Yayal Blue on White*. The form closely parallels the *Columbia Plain plato* type which has been described as undecorated *Isabela Poly-*

chrome and *Yayal Blue* (Hurst, 1986: 59). Because manufacture of *Yayal Blue on White* and *Columbia Plain* are both associated with Seville potteries, and paste analysis has proved the two to be homogeneous (Lister and Lister, 1982: 45), it may well be classified

as a decorated *Columbia Plain* form.

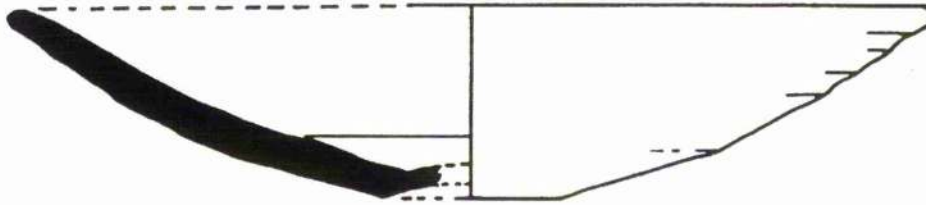


Fig. 5.1. 1554. *Yayal Blue on White plato*.

Fig. 5.1 shows a partial *plato* with thick walls and

countersunk base. Clearly visible is the obverse ridging in the interior near the base. The central base was not attached and it cannot be determined if a central hump existed. Slight throwing marks can be perceived on the exterior only. The paste colour is tannish white with visible tempering. Glaze is off-white and worn completely off in several places. Two fairly thick and crudely brushed light blue concentric lines can barely be perceived intersecting and running parallel to the central obverse ridging.

Fig. 5.2. *Columbia Plain*. 1554.

A tin glazed handle with a crazed grey-white glaze. Two grooves run from the top to the base. The paste is brownish-tan. Discolouration of the sherd may have occurred in the wreck deposition.

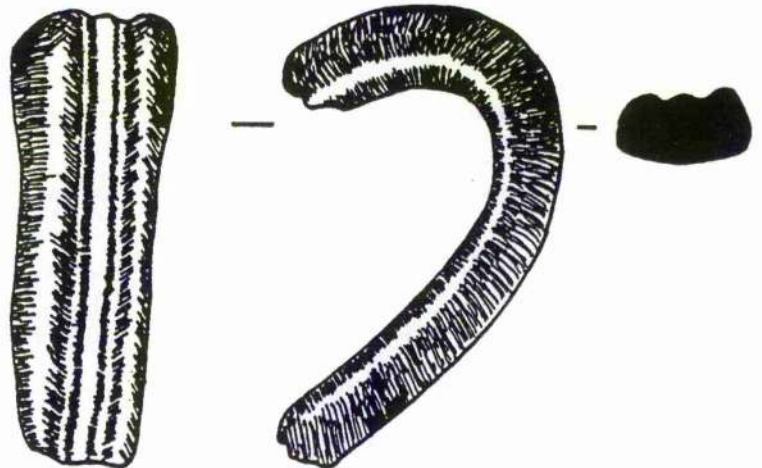


Fig. 5.2. 1554. *Columbia Plain handle*. Scale 1/1.

Handles such as these may have been attached to small pitchers.

LATE 16TH CENTURY EXAMPLES

Originally published by Martin (1979) *Columbia Plain* examples from the Spanish Armada of 1588 were recovered only from the wreck of the *Trinidad Valencera* and included: part of a shallow bowl, eight almost identical plates or *platos*, and the bottom part of a small *escudilla* (ibid.: 285). The fabrics are soft and medium grained with visible mineral inclusions and particles of red brick, with paste colours ranging from light cream to light pink (ibid.: 284). Glaze on the examples ranges in colour from off-white to black - which Martin contends is due to its deposition near iron concretion - and one plate half dipped in a green glaze (ibid.: 284 - 285).

Further evidence that blackened tin glaze, also identified as *Columbia Gunmetal Variant* (Lister and Lister, 1978: fig. 1b, 1982: 48; Deagan, 1978) is purely a result of a site deposition reaction comes from the site of Qsar es-Seghir where Boone noted a direct association with flat, opaque black glazed sherds which were found submerged in wells (1984, 81). The Listers, however, have left the question of whether the dark colouration is indeed a different type open to discussion and questioned whether examples of black glazed plates pictured in the painting *Jesus in the House of Martha and Mary* by Velázquez (circa 1618) may be a type of *Columbia Gunmetal* (1982: 52, fig. 4.9). Deagan also argues the probability of a dark glazed *Columbia Plain* variant and concludes that the reaction to submersion has not consistently produced a blackened glaze, and the phenomenon was not reported on shipwreck sites (1987: 57 - 58). Finds recorded from the shipwrecks in this study, however, clearly exhibited a form of oxidation or reaction to submersion which resulted in a darkening of the tin glaze.

In addition to the Spanish Armada *Columbia Plain* examples, Martin identified another group classified as *tin glazed earthenware* which is a finer grade than *Columbia*

Plain with thinner walls and a thicker, more evenly applied glaze (ibid.: 286 - 287) which occurred with some frequency on the wreck of the *Trinidad Valencera* and was present on the *Girona* (ibid.: 289). Martin notes that the *tin glazed earthenware* examples have a finer paste which is smoother and without grit inclusions, with paste colours ranging from light cream to pink, and paste analysis has confirmed a fabric very similar to *Columbia Plain* (Williams, 1979: 298 - 299). Triple firing scars are visible on the *tin glazed earthenware* finds like those associated with *Columbia Plain* examples.

The forms recovered included wide-brimmed plates with concave or inset bases, *albarellos* (drug jars), and bases of wide-bellied pots (ibid. 289, see Martin figs. 22 - 32: 287). Goggin also identified a "thin white majolica" from Caribbean contexts with 14 sherds coming from the site of La Vega Vieja, Dominican Republic, which dates to between 1495 and 1562 (1968: 144, 24). Goggin notes the suggestion of certain of the "less massive ceramic forms" in paintings of Zurbarán, specifically *Bodegón*, although the archaeological specimens date much earlier (ibid. 144). Examples of the ware were also identified from the Padré Island wrecks of 1554 and consisted of a base sherd of a plate and the body section of a vessel with a moulded scalloped design. The ware may also refer to *Faenza White a majolica* of Italian origin, which dates to the second half of the 16th century (Deagan, 1987: 70; Lister and Lister, 1982: 77).

Although there are distinct differences between the more crudely made and thicker walled *Columbia Plain* examples, *tin glazed earthenware* was most likely produced at the same potteries and inclusion of the forms is important as it relates to the mid to late 16th century assemblages. Collections from wrecks after the late 16th century encountered in this study are devoid of any finer grade *Columbia Plain* or thinner walled *tin glazed earthenware*.

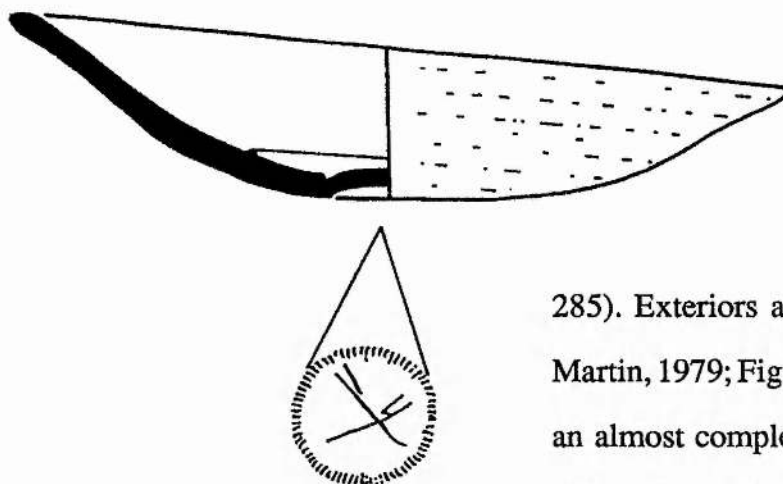


Fig. 5.3. 1588. Columbia Plain plato.

The most numerous form type from the Armada collection is a group of eight nearly identical *platos* (Martin, 1979 :

285). Exteriors are well smoothed. Fig. 5.3 (after Martin, 1979; Fig. 19: 284, description p. 285) shows an almost complete plate with remnants of an off-white glaze, and a lop-sided form. The paste is light orange-pink. There is a crude incised "X" penetrat-

ing the glaze on the underside of the base. Martin notes that four examples (three *platos* and one *escudilla*) have a similarly scratched "X" through the glaze (ibid. : 286). Goggin has reported other inscribed "X" marks as well as an "I", and an "A" suggesting that they denoted property marks and were applied by the owners and not the makers (1968: 119). Martin suggests that the frequency of the "X" makes it more likely to be a production tally (ibid.:286). A similar "X" mark was found on an *escudilla* base recovered from Qsar es-Seghir on a matte finished, ring- footed *escudilla* (Boone, 1984, Figure 1, number C: 79).

Similar inscribed "X" marks appear on the shoulders of *olive jar-type botijas* discussed in the previous chapter and may also imply a production or inventory tally. The puzzle remains concerning letters not depicting Roman numerals and other scratchings. It is entirely probable that some marks denoted ownership and others served as simple tally marks. Although the scratched marks appear with some frequency in the early part of the 17th century on the *olive jar-type botija* shoulders, marks on the bases of *Columbia Plain* examples were not encountered after the late 16th century.

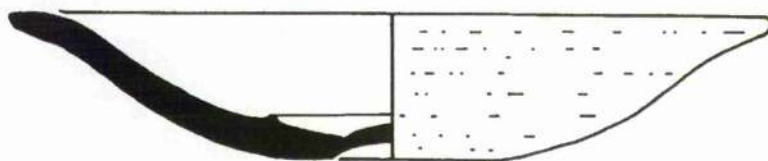


Fig. 5.4. 1588. Columbia Plain plato.

Fig. 5.4. This *plato* is similar to **Fig. 5.3.**, with a light buff fabric, and a diameter of .195m (Martin, 1979:285, Fig. 20. p. 284).

This piece was “dipped sideways to just over half its width in off-white glaze and then, from the other side, in a thin green glaze... .. overlapping in a central band about .03m wide.” (ibid.: 285).



Plate 5.2. 1588. Tin glazed and Columbia Plain. Courtesy Colin Martin.

The dipping and additions of a green glaze decorative technique have also been reported by Goggin and linked to a Moorish tradition which survives today in Portugal (1968: 119). Goggin also noted some examples may be plain green, with others having broad green bands on the rim (ibid.). Examples from the site of Qsar es-Seghir dated to

the late 15th and early 16th century (as discussed above) had green glaze additions, with pronounced green tint particularly around handles and bases, apparently an intentional decorative technique (Boone, 1984: 81).

The additions of green glaze on the Spanish Armada examples are significant in that they represent the last recorded examples of *Columbia Plain* finds from shipwrecks used in this study which bear evidence of a green glaze. Goggin's chart of green glaze frequency (1968: 118, Table 16.) suggests an elimination of the practice by the mid 17th century. Finds from the site of Isabela, Dominican Republic, dated from 1493 to 1503 registered a high percentage (70.49 %) of green glaze on the total *majolica* sherd sample (ibid.). Finds from the Cepicepi, Dominican Republic site thought to date to around 1600 had no evidence of green glazed *majolica* and the Fig Springs, Florida site, postulated to date to 1615 through 1650 had a very small (1.69%) percentage (ibid.).

The archaeological record strongly suggests that green glaze additions may be used as a temporal indicator with the late 16th century or very early 17th century as its terminus. Large collections of *Columbia Plain* examples from wrecks beginning in the 1620's (*San Antonio* (1621), *Atocha* (1622)) are devoid of any green glazed *plato* or *escudilla* forms in addition to the larger vessels, with the exception of a one small spout recovered from the *Atocha*.

Fig. 5.5. (after Martin, 1979: 285, fig 4. # 21) Spanish Armada. *Columbia Plain*

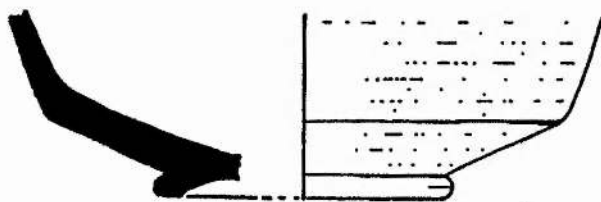


Fig. 5.5. 1588. Escudilla. After Martin.

escudilla. This *escudilla* consists of a ring-footed base and wall sherd with a light buff fabric and an off-white glaze. The underside of the base is inscribed with an "X" scratched through the glaze (ibid.). The central portion

of the base was not recovered and it cannot be determined whether the example has a countersunk central interior. The carination of the form is clearly evidenced.

Fig. 5.6. Spanish Armada. *Columbia Plain escudilla*. Recovered after Martin's (1979) publication, this *escudilla* consists of a portion of the wall and rim and is similar to the above. Actual rim diameter is estimated. The lip is slightly everted and the exterior wall where the carination begins appears to be slightly smoothed.

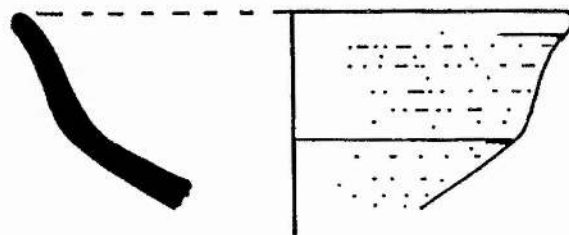


Fig. 5.6. 1588. *Escudilla*.

Fig. 5.7. (after Martin, 1979: 284 - 285, fig. 4 no. 18) Spanish Armada. *Columbia Plain ponchero* or large serving plate or bowl. This rim sherd has a pinkish fabric with an off-white glaze (ibid.). Throwing marks can be perceived on the exterior walls with

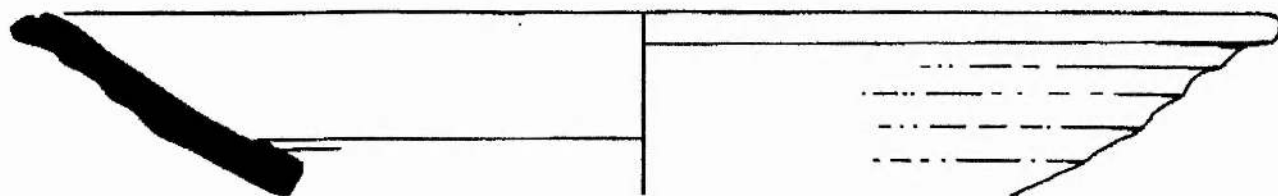


Fig. 5.7. 1588. *Columbia Plain serving bowl*. After Martin.

the interior fairly well smoothed. A raised ridge runs along the interior wall approximately 5.2 cm below the rim. It may be a result of a mould impression as it appears on later examples at virtually the same depth from the interior rim.

Plate 5.3. Fig. 5.8. Spanish Armada 1588. About two-thirds of an unglazed ceramic mortar in what appears to be *Columbia Plain* paste with an inverted rim, sharply sloping sides, and a thick flattened base. The top part of an incised decoration is visible just

below the rim on the exterior consisting of the base of a triangle filled with angled parallel lines, and a crude angled "X" to the right with the base joined by a line. Paste is chalky white, tempered with fine mineral

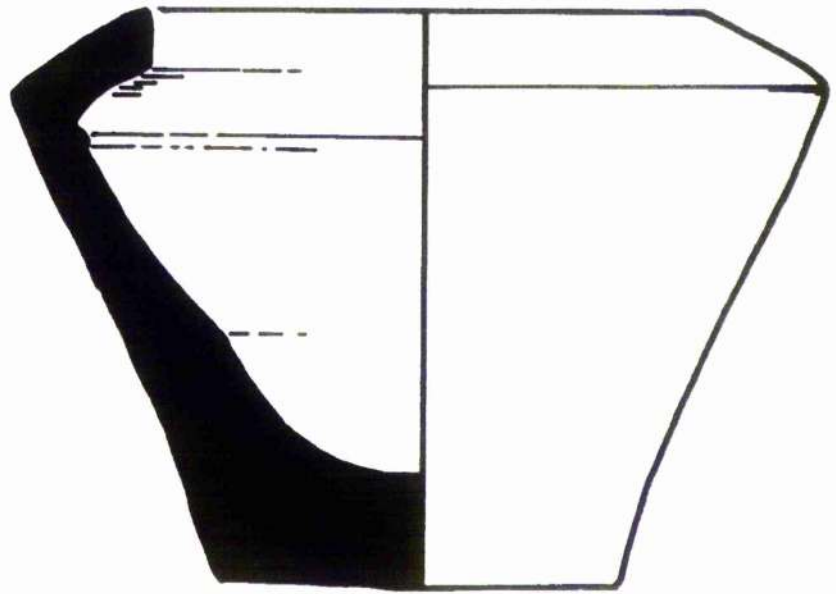


Fig. 5.8. 1588. Mortar.

particles. A mortar very similar to this was recovered from the *Atocha* (1622) as well as less similar ones from the *Concepción* (1641) and the *Tolosá* and *Guadalupe* (1724).



Plate 5.3. 1588. Mortar.

This example was found in a context suggesting an association with the preparation of gunpowder (Colin Martin, pers. comm., 1986). Other uses may have included the grinding of spices for the preparation of food.

SUMMARY OF 16TH CENTURY FORMS

Although the early 16th century is not represented by finds from shipwrecks, the review of *escudilla* examples from the site of Qsar es-Seghir by Boone (1984) dated to the late 15th and early 16th centuries provide an important starting point for a typological analysis of forms. Attributes which existed in the early 16th century which have proved to be important temporal indicators are the presence of handles, inset bases and green tint in the glaze. Inset bases are predominantly found in the first part of the 16th century and the latter part of the 15th century and appear to diminish in frequency with time.

The middle of the 16th century is represented by finds from the Padré Island shipwrecks of 1554 although the sample is limited. The one *plato* recorded for this study had evidence of blue decoration which would place it into the *Yayal Blue on White majolica* type category although the form is a typical *Columbia Plain plato*. It has some evidence that the form included a central boss or raised hump on the base. There are throwing marks visible on the exterior unlike the majority of finds from the Armada (1588) which are well smoothed. The central hump and well smoothed walls are considered diagnostic attributes of the majority of the 16th century examples. The finds from the Spanish Armada of 1588 reveal the standardised nature of the type and include decorative additions of green glaze on the *platos* which has not been recorded on later finds. The one *escudilla* example exhibits a ring-footed base. There were no recovered inset-base *escudillas* recovered which may suggest the inset-base style had been discontinued although the sample is too limited for firm conclusions.

Incised markings on the exterior bases of the *platos* and *escudillas* occur throughout the century and may represent production tally marks for the Roman numeral ("X")

marks (Martin, 1979: 286) or owners' marks in other examples recorded by Goggin (1968: 119). Marks were not encountered in any later contexts. Also of note in the finds from the Armada is the association of a finer grade *Columbia Plain* identified by Martin (1979: 286 - 287) as *tin glazed earthenware* also encountered on the 1554 Padré Island wrecks. The type and association with the cruder *Columbia Plain* wares appear restricted to the 16th century.

17TH CENTURY COLUMBIA PLAIN

Wrecks from the first part of the 17th century have yielded an extensive collection of *Columbia Plain* forms. The first examples recorded from the 17th century are from the wrecks of the *San Antonio* (1621) and the *Atocha* (1622). The total extent of the *Columbia Plain* assemblage from the *San Antonio* is unknown because the wreck was initially salvaged by the 17th century Bermudians, in addition to the 20th century salvage efforts of Teddy Tucker. A portion of the Tucker finds from the *San Antonio*, are now housed at the Bermuda Maritime Museum. Two *escudillas* and one large serving bowl or *ponchero*, were recorded for this study.

Columbia Plain examples from the *Atocha* were recorded shortly after their recovery. The collection consisted of finds from the main wreck deposit discovered in 1985, identified as the lower hull remains and cargo, and from a trail of artifacts leading to what is believed to be the forward portion of the vessel. Since it was a common table ware, fragments in the lower hull of the *Atocha* would not be expected, although finds included 5 handles, 2 basal pieces from *escudillas*, two neck/shoulder pieces from small pitchers, two *plato* rim sherds, a complete basal section of a serving bowl, and 11 sherds. As the *Atocha* was a homeward-bound vessel, shipments of everyday tableware would not be included as cargo. The southern wreck trail yielded 4 intact *platos* and 4 *escudillas* in addition to serving plates and bowls, a mortar, and possibly a chamber pot or large storage jar with handles. All samples recovered had a black oxide over the glaze making them appear black. Samples were treated with hydrogen peroxide until most of the original off-white colour was restored.

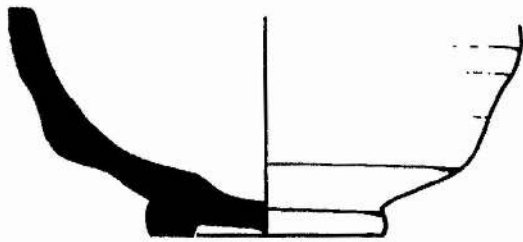


Fig. 5.9. 1621. *Escudilla*.

Fig. 5.9. *Columbia Plain. San Antonio. 1621.*

An almost intact *escudilla* with the upper part of the rim worn away to just below the lip. Glaze is blackened from immersion in seawater. The exterior walls are nearly vertical and show evidence of throwing impressions above the carination point. The interior walls are smooth and slope evenly. The base shows a central concave mould indentation.

Fig. 5.10. *Columbia Plain. San Antonio.*

1621. A similar base section of an *escudilla* with a more smooth interior profile lacking a pronounced basal depression. A slight finger throwing mark can be perceived just above the carination point.

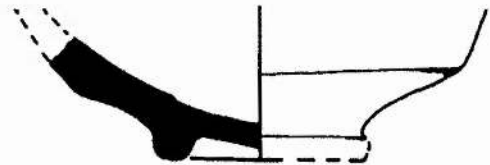


Fig. 5.10. 1621. *Escudilla*.

Fig. 5.11. *Columbia Plain. Atocha 1622.* A small intact *escudilla* similar to the above.

Rim diameter 121 mm. Interior walls are well smoothed with firing scars 57 mm apart. Ring footed base is roughly applied with little attention to detail. Thick oxidised tin glaze covers the entire vessel. Paste is creamy white without visible tempering.

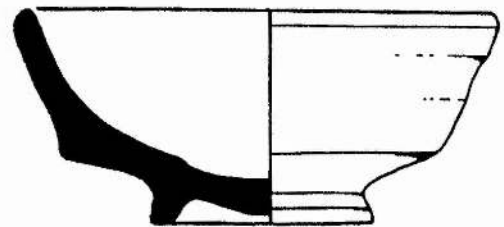


Fig. 5.11. 1622. *Escudilla*.

Fig. 5.12. *Columbia Plain. Atocha* (1622). An intact *escudilla* similar to the above with slight turning marks visible on the exterior walls. Rim diameter 127 mm. Interior well smoothed with possible mould depression

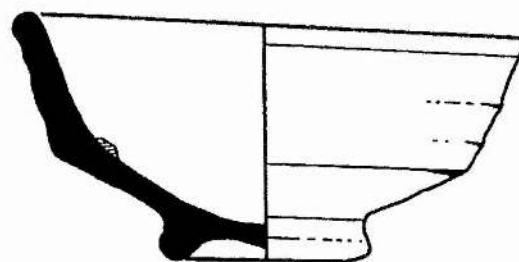


Fig. 5.12. 1622. Escudilla.

measuring approximately 36 mm although in this sample the depression is well smoothed and barely discernible. Firing scars on the interior are 58 and 64 mm apart. A small indentation on the exterior base inside the footring may be firing scar although it is covered with thick glaze. Glaze is thick ranging in colour from off-white to black oxidised. Paste is not visible.

Fig. 5.13. *Columbia Plain. Atocha* 1622.

Bowl or *escudilla* with rim diameter 143 mm. Simple rim with carinated walls and a heavy ring footed base. Firing scars not visible. A blemish on the

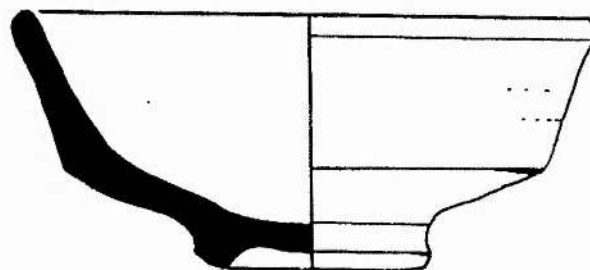


Fig. 5.13. 1622. Escudilla.

exterior may be a stacking mark. The interior is well smoothed with a small depression in the interior base measuring approximately 40 mm in diameter. Paste is a creamy white to pinkish tan core. Very few visible inclusions and no visible tempering.

All three intact *escudillas* in the *Atocha* (1622) collection appear to have slightly varying interior profiles. This may suggest that the interiors were shaped individually while being thrown "off the hump". There is no evidence in the early part of the 17th century of any inset or countersunk bases as exterior ring-footed bases are predominant.

Throwing marks are visible on the exterior sides although where the vessel walls turn inwards to form the base the surface is usually well smoothed.

Fig. 5.14. (Plate 5.4) *Columbia Plain. Atocha*. 1622. A rare form recovered from the Southern *Atocha* wreck trail, this tin glazed porringer with lugged handles measures 16.2 cm across the handles, 11.4 cm rim diameter, and is 5.1 cm high. Unlike the cruder *Columbia Plain escudillas*, this piece is of a slightly finer quality, although it differs from the thinner walled *tin glazed*

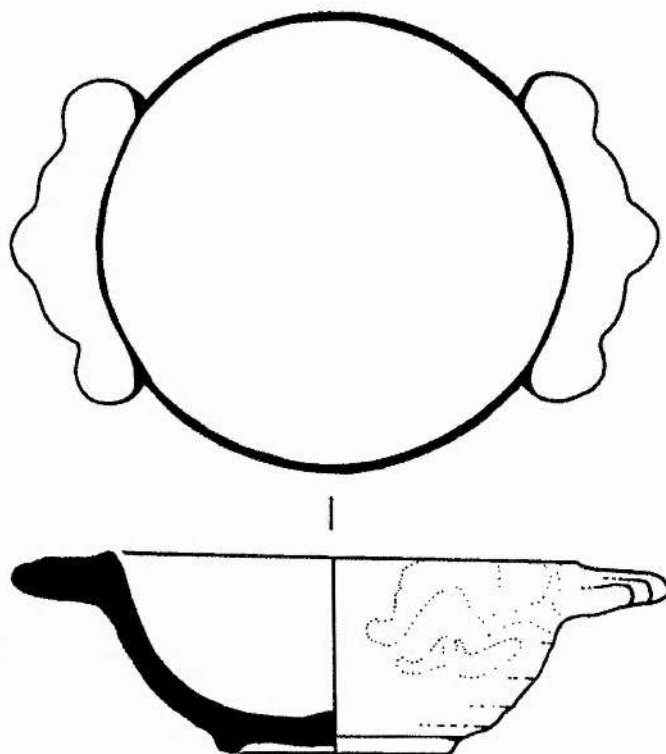


Fig. 5.14. 1622. Porringer.

earthenware type found associated with earlier *Columbia Plain*. The form is similar to silver porringers recovered on the *Atocha* (1622) and the non-carinated, ring footed bowl shape is a close parallel to *majolica* bowls also found on the *Atocha* and discussed later. Recovered from deep in the mud in a potentially anaerobic environment, the grey and white glaze still had a brilliant shine when recovered. The glaze appears intentionally crazed with the white and grey merging to form an almost marble quality. Although lugged handles on the cruder *Columbia Plain escudillas* would imply an earlier date period, it is important to note that the glaze and paste on this example are easily differentiated. It is included in this section because of its association with the 17th

century examples. The walls are much thinner than *Columbia Plain* although thicker than the *majolica* wares. The paste is creamy white.



Plate 5. 4. Tin glazed porringer. 1622.

Fig. 5.15. *Columbia Plain*. 1622. Top view of a complete *Columbia Plain* plato. Thick off-white glaze covering most of the exterior. Triple firing scars are visible on the bottom interior. Scars are approximately 5.5 cm - 6 cm apart. Walls are well smoothed on the interior with the general absence of finger impressions. The interior near the base exhibits the “obverse ridging” associated with the *jigger* and *jolly* manufacturing technique although there is no raised central hub. Interior ridge near base measures 6.5 cm. Exterior rim measures 195 - 200 mm. Exterior walls have visible finger throwing impressions sloping sharply down to a 3 cm wide concave bottom that serves as the base.

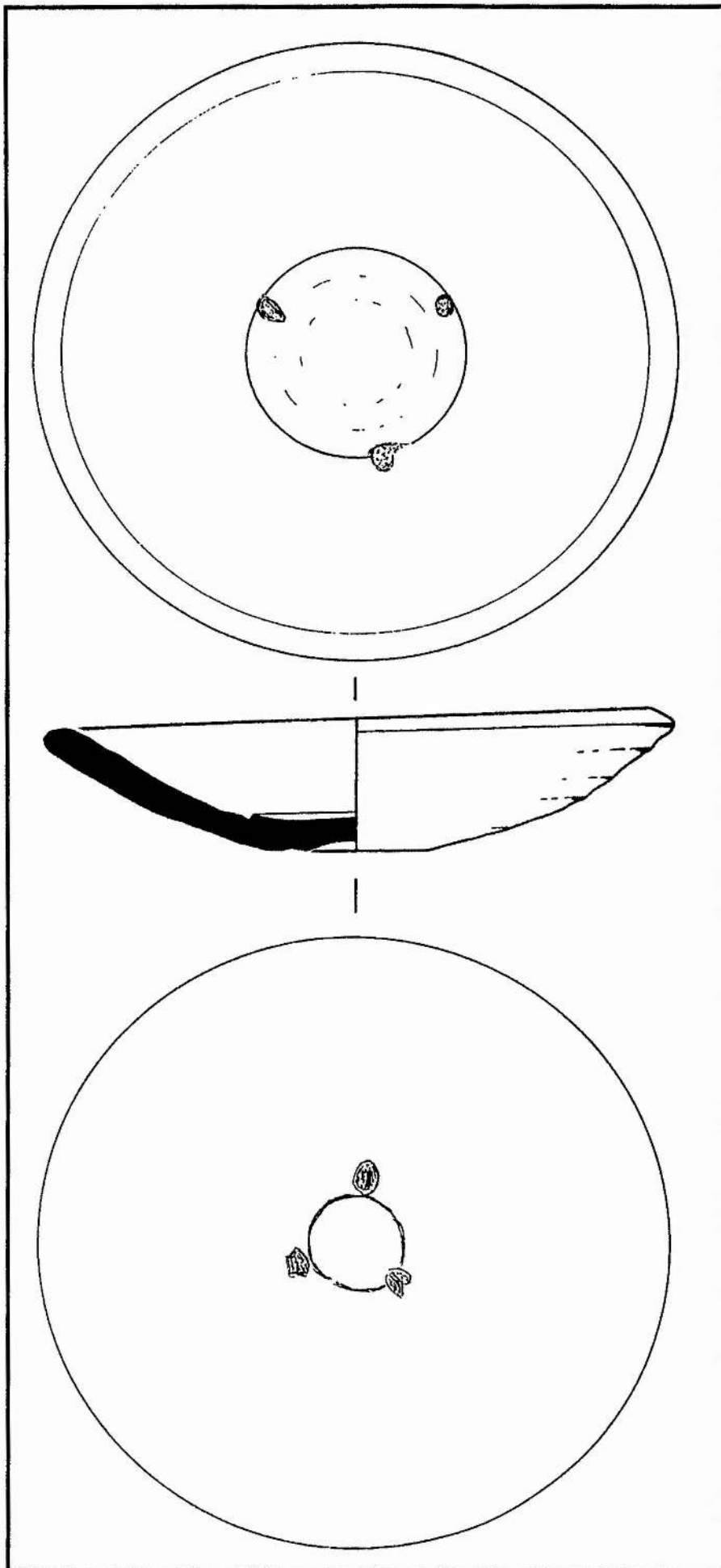


Fig. 5.15. 1622. Plato.

Triple firing scars are also visible on the exterior around the concave base set approximately 30 mm - 35 mm apart. Paste is a creamy white with few fine mineral inclusions.

Fig. 5.16. (following page) *Columbia Plain. 1622.* Two sherds forming a complete *plato* similar to above. Triple firing scars are visible on the interior. The obverse ridge is 65 mm wide on the interior. Incised rings encircling exterior depressed base may be from a small stone scraping the side as the plate rotated on wheel. The exterior concave base is worn and measures 41 mm in diameter. The glaze is thick and eroded over most of the plate. The paste is a creamy white

and tempered with fine sandy particles.

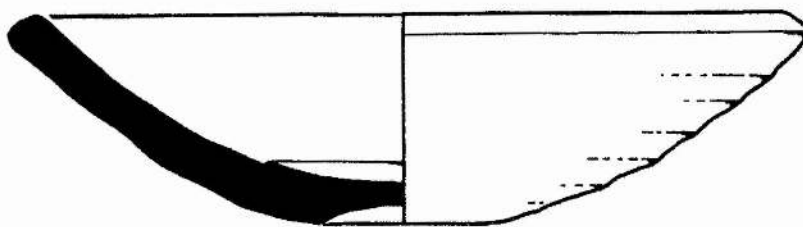


Fig. 5.16. 1622. Plato.

Fig. 5.17. Columbia

Plain. 1622. A complete plato similar to above.

Glaze is thick although eroded. The interior is well smoothed with

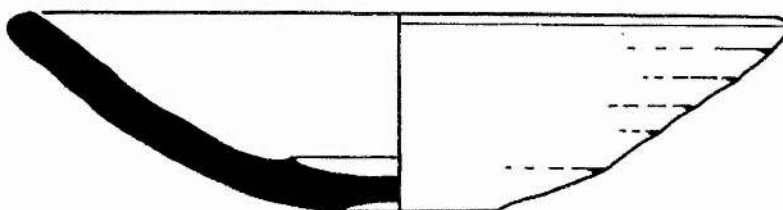


Fig. 5.17. 1622. Plato.

throwing marks visible on the exterior. A small scar on the exterior wall looks almost like a sagger scar but may have resulted from the plate leaning against another stack while being fired. Triple firing scars are 55 mm apart on the interior. The obverse ridge on the interior is 59 mm wide. Exterior base depression measures 3 cm wide. Paste is creamy white without visible inclusions.

Fig. 5.18. Columbia Plain.

1622. A complete plato although bottom is well abraded. A slight incised line on the exterior appears to be a turning mark.

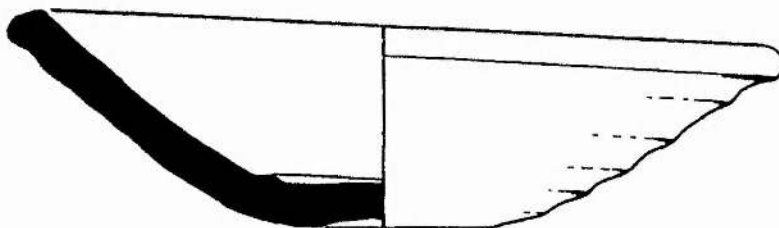


Fig. 5.18. 1622. Plato.

Interior walls are pitted and firing marks are not visible due to fabric erosion. Glaze is a thick oxidised tin glaze. Paste is cream to pinkish in colour with few inclusions and

no visible tempering. Interior mould flash measures 65 mm. Exterior basal depression measures 41 mm which appears increased due to surface abrasion. Vessel walls are a bit steeper on this *plato* than the others.

Fig. 5.19. *Columbia Plain.* 1622. A complete *plato* similar to the above.

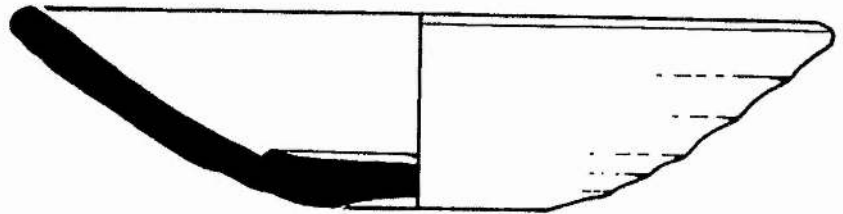


Fig. 5.19. 1622. Plato.

Visible triple firing

scars interior and exterior. Interior scar measures 58 mm. Paste is a creamy white without visible inclusions or tempering. Glaze is a thick oxidised tin glaze. Interior obverse ridge measures 65 mm. Concave base measures 45 mm.

Fig. 5.20. *Columbia Plain.* 1622. Moulded in a similar fashion to that of the smaller

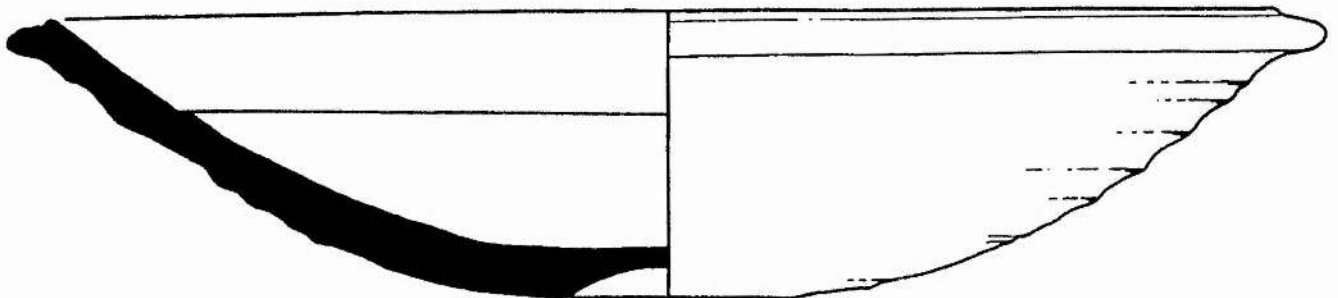


Fig. 5.20. 1622. Serving bowl. 1/2 Scale.

platos, this serving container was made with only slightly more care and attention to detail compared to the smaller *platos*. This example has a flared rim and well smoothed interior. Interior obverse ridge lies 34 mm above interior base. Triple firing scar

measures from 70 mm to 76 mm apart. Turning marks are evident on exterior with small bubbles visible. Bottom exterior is worn and firing scars are not discernible. Glaze is a thick oxidised tin glaze fading from off-white to black. Paste is creamy to tan tempered with very fine particles. The concave base measures 47 mm in diameter.

Fig. 5.21. *Columbia Plain*. 1622. A *ponchero* 2/3 intact. Similar to the above. Triple firing scars are 55 mm apart at the interior bottom of the bowl. The interior is well

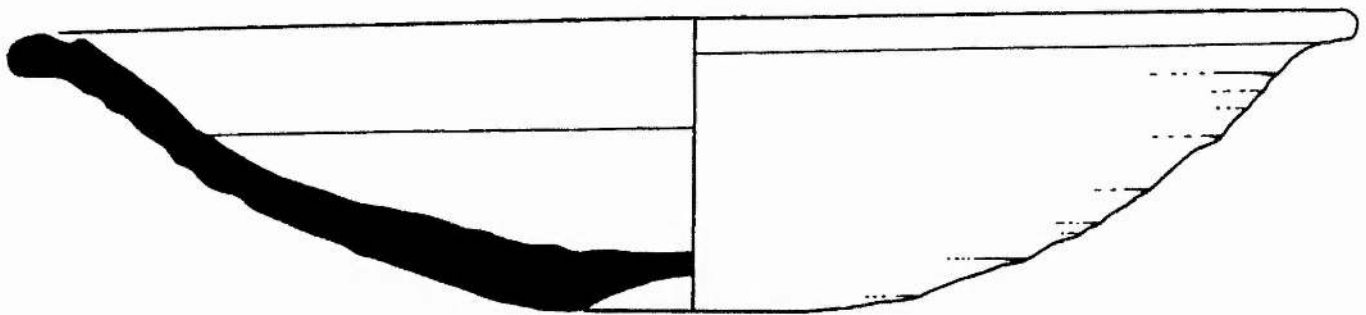


Fig. 5.21. 1622. Serving bowl. 1/2 Scale.

smoothed. A small ridge runs around the interior approximately 32 mm from the bottom making the interior walls slightly stepped. It is not known whether this is a decorative feature or a result of the manufacturing process. An intentional groove encircles the rim lip which flares outwards. The exterior walls exhibit throwing marks roughly smoothed if at all. A concave base allows the bowl to sit flat with firing scars measuring 45 mm apart. There are small clay droppings in the hollowed-out base which measures 54 mm in diameter. Glaze is a thick oxidised tin glaze. A fresh break reveals an off-white cream coloured cored fabric ranging to a tannish-brown.

Fig. 5.22. *Columbia Plain*. 1622. . Large bowl or *ponchero*. Rim diameter 248 mm. Only half of this vessel was recovered with the complete ring-footed base and enough of the sides and rim to reconstruct its form. The interior is well smoothed with a triple

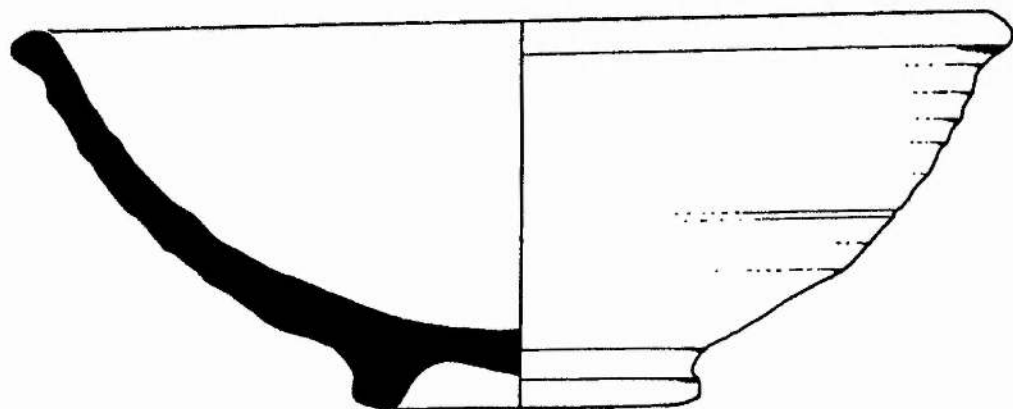


Fig. 5.22. 1622. Serving bowl. 1/2 Scale.

firing scar measuring 65 mm to 60 mm across with an additional mark in the centre suggesting a possible four pronged spacer. Throwing marks are visible on the exterior. An incised line 52 mm from rim does not appear to be decoration and may have been caused by a small pebble while the vessel was being formed. It does not appear that the vessel was formed on a mould although construction and form are otherwise similar to the smaller *Columbia Plain escudillas*. The thick tin glaze ranges from off-white to eroded grey-black. Paste is creamy white with a pinkish core.

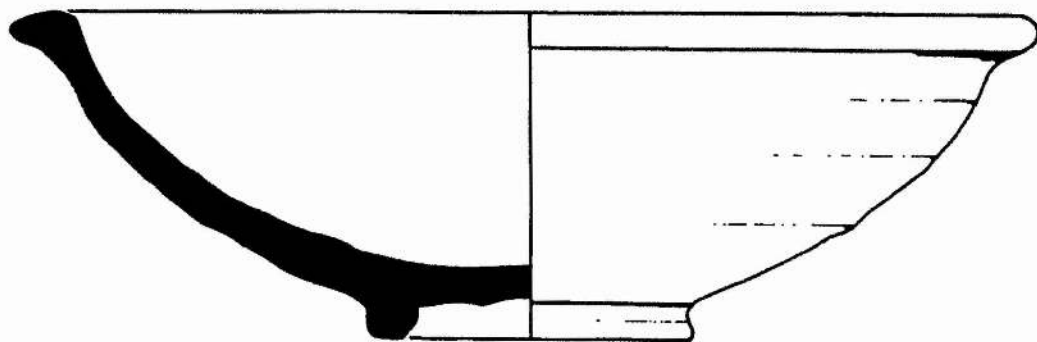


Fig. 5.23. *San Antonio* 1621. *Santo Domingo Blue on White* serving bowl.

Fig. 5.23. 1621. Santo Domingo Blue on white bowl. 1/2 scale.

The profile of this *majolica* bowl is very similar to the above example from the *Atocha* (1622). It is slightly flatter although construction appears nearly identical. Part of the *Morisco Ware* group, *Santo Domingo Blue on White* was probably produced by the same potters making *Columbia Plain*. The item is pictured in **Plate 6.39** in the section on *majolica*. The interior rim has been smoothed and lacks the thickened ridge which appears on the two other examples.

Fig. 5.24. *Columbia Plain*. 1622. Flat-bottomed serving bowl. The remaining half of

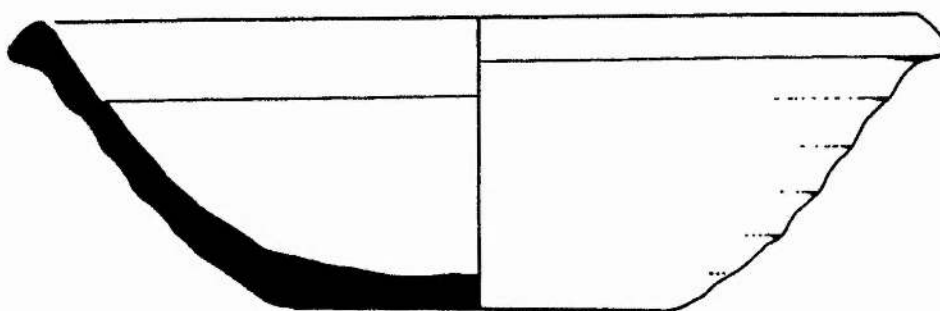


Fig. 5.24. 1622. Serving bowl. 1/2 Scale.

a heavily encrusted tin glazed bowl with rim diameter estimated to be 234 mm. The only one of this type recovered from the *Atocha* site, the exterior walls have visible turning marks sloping to a flattened base. The interior is well smoothed with a ridge on the interior wall running around the vessel 21 mm from the rim. Glaze is thick off-white although worn away except where protected by marine growth. Paste is a pinkish tan to creamy white without visible tempering.

Fig. 5.25. *Columbia Plain*. 1622. Mortar. Covered by a thin oxidised glaze on the interior and overlapping the rim running down the sides, this ceramic mortar was recovered south of the main wreck deposit believed to be near the bow section. Similar

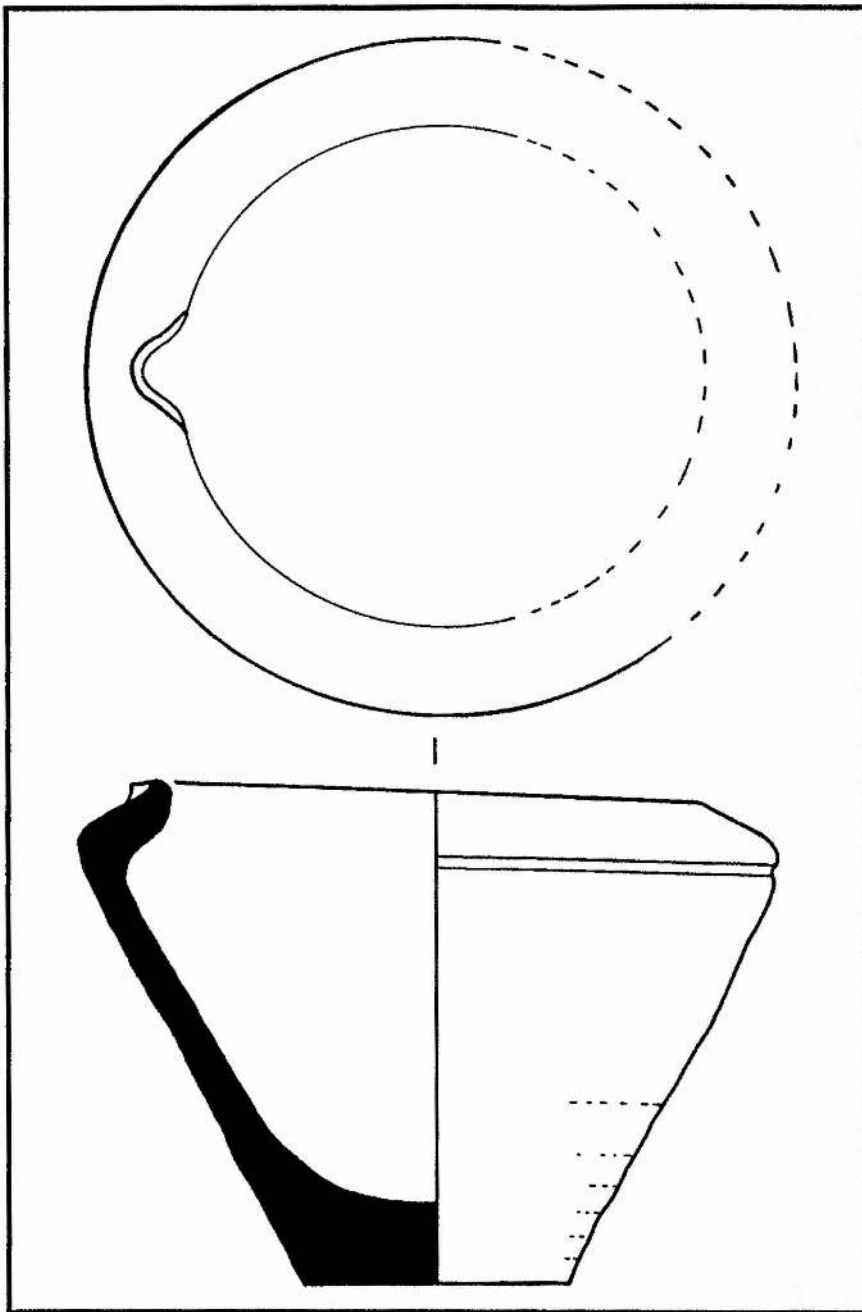


Fig. 5.25. 1622. Mortar. Scale 1/2.

to Fig. 5.8 recovered from a Spanish Armada wreck. Examples have also been recovered from later wrecks in the Dominican Republic. The mortar stands 125 mm high with a rim diameter of approximately 185 mm and 70 mm at the base. An incised line encircles the vessel 17 mm from the rim and is the only visible decoration. Paste is compact off-white with little tempering. The indentation in the rim moulded from the potter's finger would serve as a resting place for the pestle.

Fig. 5.26. *Columbia Plain*. 1622. Large chamber pot with everted rim and handles. The form is similar to ones identified by the Listers (1987: 110; Fig. 56a: 101). Only the top portion of this vessel was recovered, with one handle. There are enough additional rim sherds to indicate at least one other vessel of this kind. Small flat bottomed *Columbia Plain* basal sherds with similar fabric suggest that these vessels had flat bottoms.

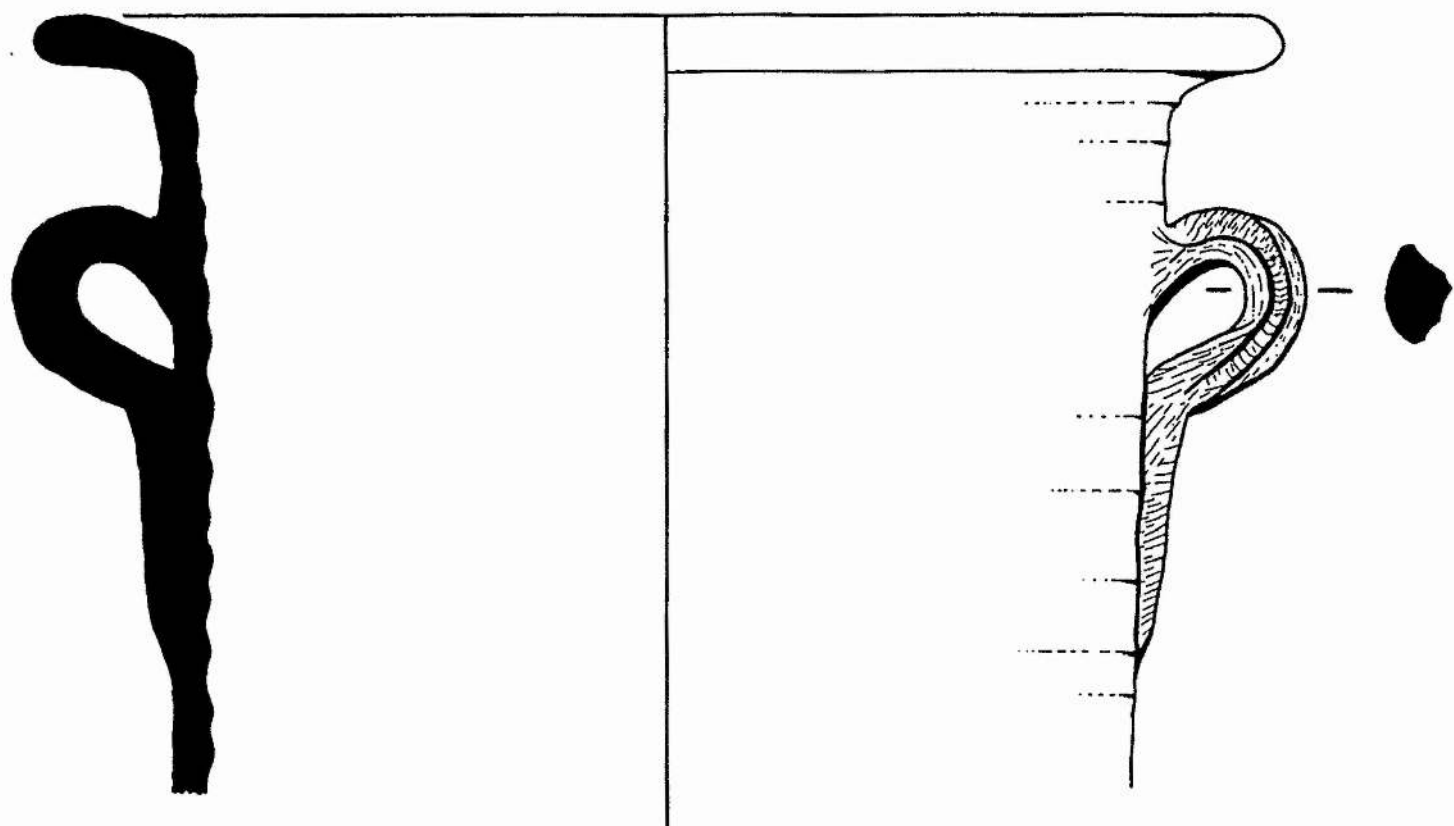


Fig. 5.26. 1622. *Columbia Plain* chamber pot. Scale 1/2.

Fig. 5.27. *Columbia Plain*. 1622. A small *Columbia Plain* spout with everted rim and narrow neck. Possibly from a type of *hydroceramo*. Rim diameter measures 49 mm. Internal diameter is 19 mm. Interior and exterior are well smoothed and appear shaped with the potter's fingers. *Columbia Plain* paste is creamy white to tan in colour although more compact than most. A thick glaze covers the interior and exterior and is emerald green in colour. This is the only example with a green glaze.

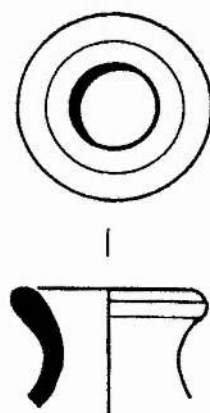


Fig. 5.27. 1622. Spout. Scale 1/2.

Fig. 5.28. *Columbia Plain*. Scale 1/2. 1622. A complete handle of *Columbia Plain* paste. The defined "U" shape suggests that this handle was applied on the exterior vessel wall and used for lifting or pouring. Although fairly worn, an octagonal construction is discernible. Glaze is almost entirely gone with only minute indications that it was once covered with a tin glaze. Paste is pinkish to cream with fine mineral inclusions. Fabric appears slightly more gritty than the other *Columbia Plain* examples but this may be due to scouring on the seabed leaving a rougher surface.

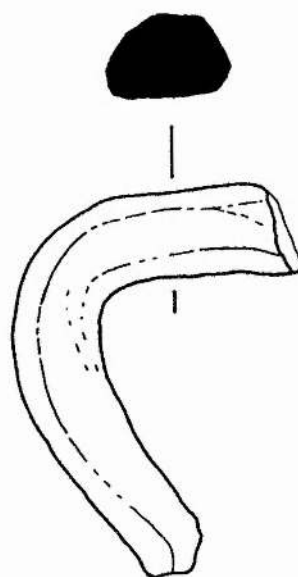


Fig. 5.28.
1622. Handle.

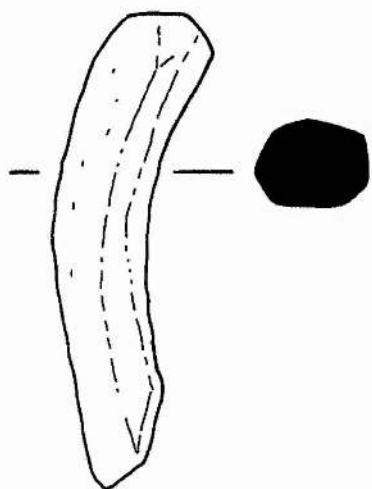


Fig. 5.29.
1622. Handle.

Fig. 5.29. *Columbia Plain*. Scale 1/2. 1622. A *Columbia Plain* handle sherd with remnants of an oxidised tin glaze covering most of the handle. This sample is much straighter than the previous example and it is not clear how it may have been attached to a vessel or its intended function. Paste is a creamy white to tan.

Fig. 5.30. *Columbia Plain*. Scale 1/2. 1622. A *Columbia Plain* handle sherd similar to **Fig. 5.28** at the base. The sherd may be the bottom half of a "U" shaped handle for lifting and pouring. A thin eroded black coloured tin glaze covers most of the handle. Paste is off white tempered with fine mineral particles. The gritty surface may also be a result of seabed abrasion.

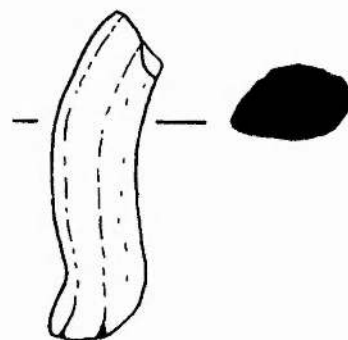


Fig. 5.30.
1622. Handle.

Fig. 5.31. *Columbia Plain*. Scale 1/2. 1622. A small *Columbia Plain* handle sherd which may be a small section of a handle similar to the one recovered on the chamber pot, Fig. 5.26.



Fig. 5.31.
1622. Handle.

Later in the 17th century, finds from the wreck of the *Concepción* (1641) included a large collection of ceramics and porcelain. The majority of the finds are on display at the Museo de las Casas Reales, Santo Domingo, Dominican Republic. *Columbia Plain* examples, however, were not in evidence when this researcher visited the collection. Utilitarian wares consisted solely of Mexican produced *majolicas*. The complete range of finds is not known, yet it is believed that all representative types were on display.

REVIEW OF 17TH CENTURY FORMS

Shipwrecks from the first half of the 17th century have revealed a large variety of *Columbia Plain* forms. Through the first half century, as evidenced by the finds from the *Atocha* (1622), *Columbia Plain* served as the primary utilitarian ware. The early 17th century *platos* are fairly uniform and compare in style to examples recovered from the Spanish Armada of 1588. The *platos* were most likely manufactured using a mould on top of the wheel head, with the exterior trimmed with a tool and smoothed with the potter's hands. Noticeably lacking is the central raised hump on the interior base below the obverse ridge which occurs on earlier examples.

The *escudillas* recovered from the 17th century wrecks also exhibit some similarity to the limited finds from the Spanish Armada of 1588. All examples recorded have a ring-foot base and carinated sides. A porringer recovered from the 1622 wreck of the *Atocha* is the only tin glazed non-decorated *majolica* which has handles. The porringer's form, paste and glaze are easily differentiated from the typical *Columbia Plain* *escudillas* and more closely associated with *majolica* bowls. Construction of the 17th century examples may have been achieved using the "off the hump" method as the lack of uniformity on interior profiles suggests.

Other 17th century forms include large serving bowls (flat bottomed, and with ring foot bases), serving plates, a mortar, and one chamber pot. The mortar resembles an example from the Armada (1588). Finds from the 1641 wreck of the *Concepción* did not include examples of *Columbia Plain* with the majority of utilitarian wares originating in the New World.

There were no collections from the latter part of the 17th century available for recording during the course of this study. It is inevitable that future discoveries will provide comparative collections.



Plate 5.5. 1622. Platos and escudillas.



Plate 5.6. 1622. Mortar.

18TH CENTURY COLUMBIA PLAIN

Finds from the early 18th century include collections from the *Tolosá* and *Guadalupe* wrecked in 1724 and represent the largest number of intact *Columbia Plain platos* and *escudillas* known to this researcher. A large part of the collection is housed in the shipwreck repository of the Museo de las Casas Reales, Santo Domingo, Dominican Republic, and is available for further study. My visit in November of 1986 revealed 19 whole or near whole *escudillas* which upon casual observation looked nearly identical. The collection also included 6 intact or reconstructed *platos* and 2 small pitchers. As discussed previously, the two wrecks have been treated as one assemblage and there were no visible differences between examples from the two wrecks.

A peculiar recurring characteristic encountered on the *platos* and *escudillas* is the propensity of the glaze to flake off. Evidence of a thick tin glaze can be observed on most vessels only in small patches. Because the extent of the *Columbia Plain* collection is not known, it cannot be determined whether this is characteristic of the entire collection. The large number of intact *escudillas* confirm that the ware was still popular in the early part of the century. Present in all examples is a pronounced depression at the bottom of the interior of the bowl which measures between 140 mm and 200 mm.

Interior profiles are nearly identical and the bowls all appear to have been moulded on identical jiggers, or possibly the same one. The high degree of uniformity gives further evidence that the wares were mass produced. Wall thickness near the rim measures between 80 mm and 90 mm on all examples. Interior rim diameters measure



Plate 5. 7. Plato and Escudilla finds from 1724.

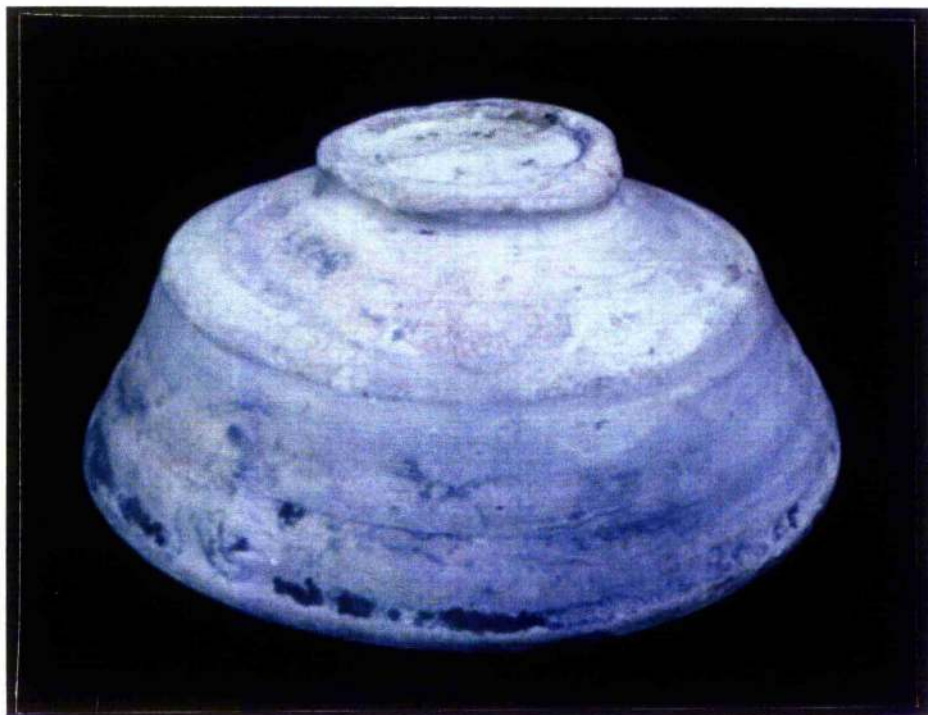


Plate 5. 8. Escudilla from 1724.

between 117 mm and 124 mm. All examples have added ring-foot bases finished with a tool. Glaze colour runs from rust to black (all apparently effects of salt water immersion). The paste on the 18th century examples is harder than earlier *escudilla* finds and colour ranges from buff to tan.

Fig. 5.32. *Columbia Plain. 1724.* *Columbia Plain escudilla* with a fairly smoothed exterior and no triple firing scars. Finger throwing marks are evident on the exterior ring foot base. The example has a slightly grooved or linear textured surface that seems to differentiate the 18th

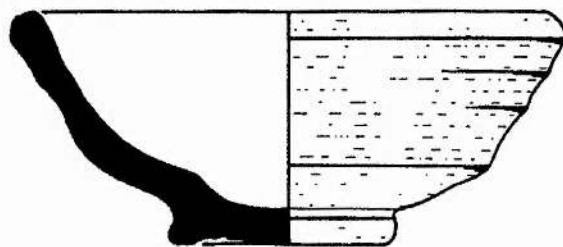


Fig. 5.32. 1724. Escudilla.

century examples from earlier finds. The surface treatment appears to have resulted from a rough finishing tool, a coarse cloth, or a form held against the exterior as the moulded bowl rotated on the wheel. The interior is smooth with no evidence of firing support scars. There is a uniform tin glaze worn almost completely to the paste. Glaze colour runs from rust to black. Paste is compact and the colour is buff-tan. There is little visible temper. Interior rim is 123 mm and interior basal depression is 17 mm.

Fig. 5.33. *Columbia Plain. 1724.) Escudilla* from the *Guadalupe* with similar characteristics as above. There are no visible firing scars although there is a small blemish on the interior above the basal depression which may be a cockspur scar. Finger impressions from throwing

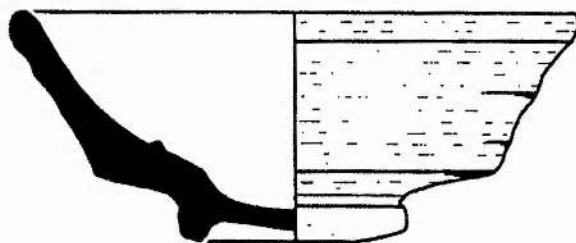


Fig. 5.33. 1724. Escudilla.

marks are fairly prevalent on the exterior although the interior appears well smoothed. A small indentation on the ring foot base is likely due to the bowl being hastily set down shortly after formation. The remains of a thick oxidised (blackened) tin glaze on the bottom exterior of the bowl may indicate that most of the glaze on this example and others like it had been eroded almost completely away. The paste is buff to tan in colour with slight mineral temper visible. Interior rim is 124 mm and the interior basal depression is 17 mm.

Fig. 5.34. *Columbia Plain*. 1724. A

similar bowl to the above. This *escudilla* is more smoothed than the others with evidence of poorer clay preparation in the form of a small burst bubble on the ring foot base. The exterior surfaces are

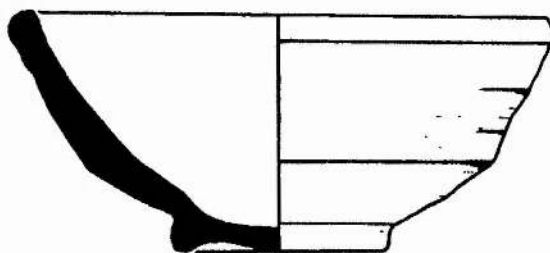


Fig. 5.34. 1724. Escudilla.

covered in a thin layer of concretion. Interior rim measures 121 mm and interior basal depression measures 16 mm.

Fig. 5.35. *Columbia Plain*. 1724. A

bowl similar to above. There are no visible cockspur scars although a there is a scar on the exterior near the rim which may be a stacking scar. Overall, the

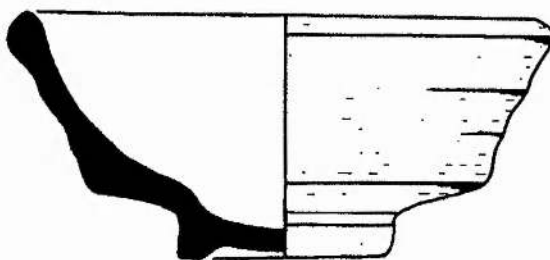


Fig. 5.35. 1724. Escudilla.

surface has more blemishes than the other bowls. Internal rim diameter is 122 mm and the internal basal depression diameter is irregular measuring 19 mm and 16 mm.

Fig. 5.36. *Columbia Plain*. 1724. A bowl similar to the above although concreted around the exterior base.

There is evidence of a thick tin glaze.

A small incised ring approximately 8

mm from the outside of the ring foot base may be the result of a small gritty particle.

There are finger marks prevalent on the outside only and a small blemish on the interior above the interior basal depression may be a cockspur scar. The bowl is slightly compressed as if pressed or squeezed when removed from the wheel making the rim more oval. The glaze is a thick oxidised tin glaze which is absent from the interior and present on the ring foot base along the exterior base. Paste shows very little tempering. Interior rim measures approximately 125 mm and measures 19 mm on interior basal depression.

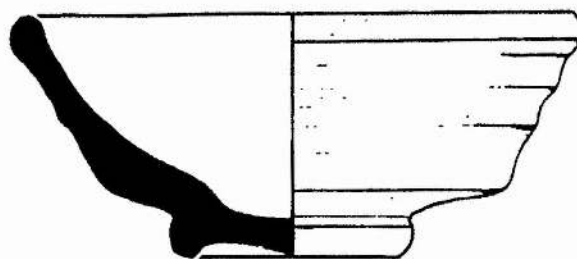


Fig. 5.36. 1724. Escudilla.

Fig. 5.37. *Columbia Plain*. 1724. A bowl similar to above with a well smoothed interior and turning marks visible on the exterior. Interior rim measures 120 mm and interior basal depression measures 16 mm.

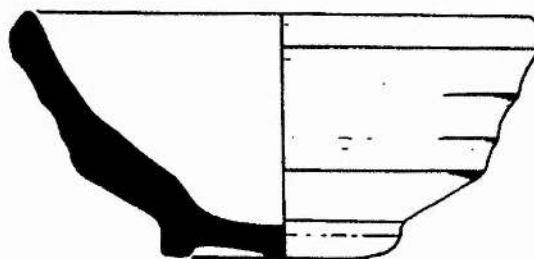


Fig. 5.37. 1724. Escudilla.

The remainder of the bowls were measured for internal rim diameter, depression at the base of the bowl and rim thickness.

<u>Artifact Number</u>	<u>Internal Rim Diameter</u>	<u>Internal Base</u>	<u>Rim Wall thickness</u>
(1M 395)	122 mm	17 mm	90 mm
(3S 196)	115 mm - 124 mm	14 mm	90 mm
(1M 383)	121 mm	15 mm	80 mm
1M 387)	122 mm	15 mm	80 mm
(3S 203)	124 mm	16 mm	90 mm
(1M385)	117 mm	15 mm	90 mm
(1M 382)	122 mm	20 mm	80 mm
(1M 396)	122 mm	16 mm	90 mm
(1M 389)	122 mm	16 mm	90 mm
(1M 386)	121 mm	15 mm	85 mm
(3S 199/1M 375)	121 mm	20 mm	80 mm
(3S 202)	121 mm	20 mm	90 mm
(3S 204)	122 mm	15 mm	90 mm

Table 5.1. Measurements of escudillas from 1724.

A later wreck in the 18th century, that of the *San José y Las Animas* wrecked in 1733, yielded two complete and one partial *escudilla* recorded by Logan (1977: 23 - 24, Fig. 14 C). **Fig. 5.38.** (after Logan) has an external rim diameter of 13.5 cm which is very close to the 1724 examples, a base diameter of 6 cm, and thickness of .8 cm (ibid.). The glaze is cream coloured with a cream coloured paste and no visible tempering (ibid.) Measurements given in Logan's text (ibid.: 24) do not perfectly match the illustration (**Fig. 5.38** after ibid.: Fig. 4 C) although it is not known if the copy is distorted slightly. The interior basal depression does not appear as pronounced in the figure, although it is definitely in evidence, and may suggest that a different mould was used. The ring-footed base looks smoothed with the sides almost vertical at the base. The finger shaping marks on the exterior resemble the 1724 examples as does the sharp carination of the sides and the slight thickened rim.

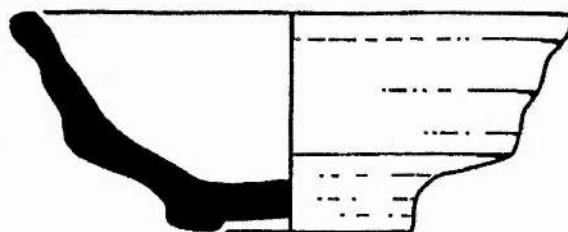


Fig. 5.38. 1733. Escudilla.

In addition to the *escudilla* finds the wrecks of the *Tolosá* and *Guadalupe* also yielded intact *platos*. They look similar upon cursory examination and appear as though similar mass production techniques were employed. The walls are thick with little attention paid to aesthetic detail. They are less uniform than the *escudillas* which may result from a greater degree of difficulty in duplicating the form. A variance of sizes can readily be perceived although not enough to suggest intentional size differentiation. Surface treatment on the exterior paste is similar to the *escudillas* as is the worn away glaze. The glaze is thick and oxidised black. Firing scars from stacking in the kiln are present throughout the assemblage.

Fig. 5.39. *Columbia Plain*. 1724. One of two smaller *platos* reconstructed from three sherds. The interior is smooth

with triple firing scars visible 1.6 cm away from the raised obverse ridge at the interior bottom. Exterior finger shaping marks are

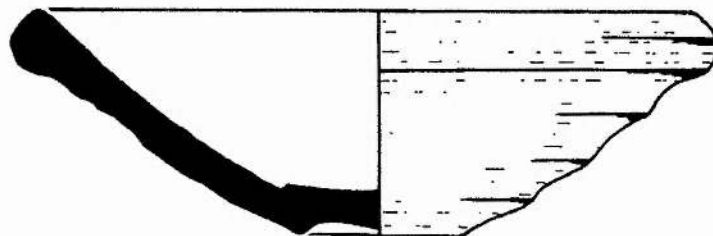
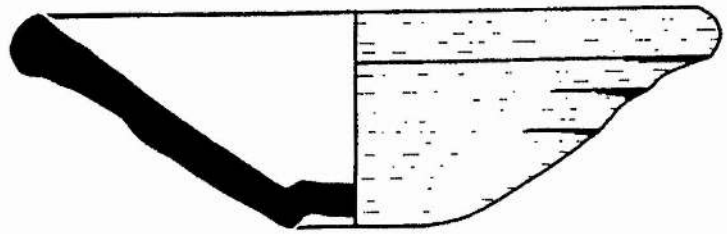


Fig. 5.39. 1724. Plato.

visible. There is evidence of a thick oxidised tin glaze ranging in colour from grey-white to black on both interior and exterior on two of the three sherds. The base is countersunk. The paste is tannish in most places although colours vary and appear affected by their post-wreck deposition. The paste is similar to the *escudillas*, harder and more compact than earlier examples. Tempering is slight although minute bits of mineral inclusions can be seen in some places.

Fig. 5.40. *Columbia Plain.*

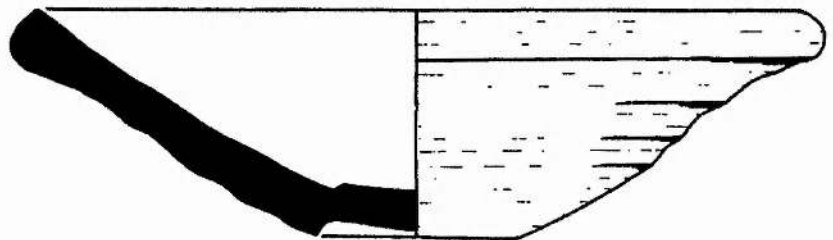
1724. The second of the smaller *platos* similar to the above. The interior is covered with heavy encrusta-

*Fig. 5.40. 1724. Plato.*

tion. The thickness and profile are estimated. It appears as though there is evidence of finger marks on the interior. The concave base has evidence of tin glaze over a small section as well as with additional remnants of a thick oxidised tin glaze on the interior and exterior. The paste is tan to reddish brown although mostly hidden by encrustation.

Fig. 5.41. *Columbia*

Plain. 1724. A plato similar to the above with finger marks evident on the exterior.

*Fig. 5.41. 1724. Plato.*

Triple firing scars are

visible on the interior 6.2 cm apart. There is a heavily oxidised tin glaze worn and scattered around the interior and exterior. The paste is smooth with a reddish-tan to pale colour with little visible inclusions or tempering.

Fig. 5.42. *Columbia*

Plain. 1724. A similar *plato* to the above with finger marks evident on

*Fig. 5.42. 1724. Plato.*

the exterior. Triple firing scars are visible on the interior 60 mm apart. There is evidence of a thick heavily oxidised (blackened) tin glaze on the interior and exterior. The paste is smooth with reddish-tan to pale colour with little visible inclusions or tempering.

Fig. 5.43. *Columbia*

Plain. 1724. A similar *plato* to the above with finger marks evident on the exterior. Triple firing scars visible on the

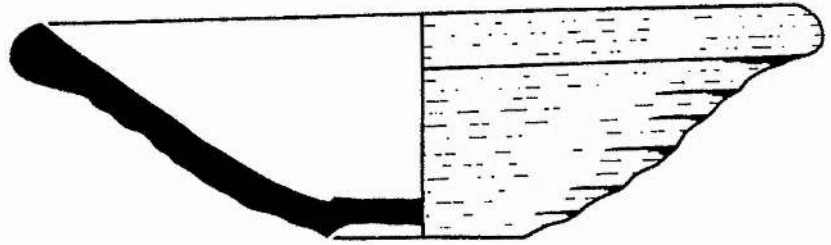


Fig. 5.43. 1724. Plato.

interior are 6.2 cm apart. This example exhibits a rather sloppier construction than the other *platos*. A heavily oxidised tin glaze is apparent throughout the interior and exterior. The paste is smooth and dark tan to brownish in colour with little visible inclusions or tempering.

Fig. 5.44. *Columbia*

Plain. 1724. A *plato* slightly larger than the above. Two finger throwing grooves are

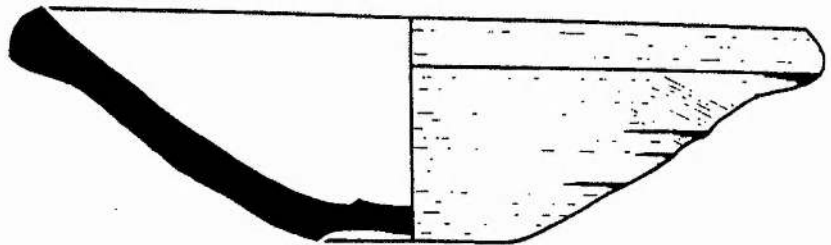


Fig. 5.44. 1724. Plato.

evident on the exterior. Triple firing scars visible on the interior 66 mm apart. A section of the exterior just below the rim exhibits a diagonal upward swish from the tool or cloth used to form the exterior. The glaze is almost totally worn away while some patches look covered in a white slip. The glaze varies in colour from an almost greenish tint to grey.

The paste is smooth and greyish-tan in colour with little visible inclusions or tempering.

Also part of the *Tolosá* and *Guadalupe* (1724) collection are two small *Columbia Plain* pitchers. The glaze on the pitchers is a thick blackened tin glaze. The paste is compact and a little lighter in colour than the *platos* and *escudillas*. The form has not yet been encountered in earlier assemblages, yet the handles resemble the basic style of earlier finds.

Fig. 5.45. *Columbia Plain*. 1724. This small tin glazed pitcher lacks a pouring spout and has a wide mouth with narrow shoulders leading to a tapered globular body. The vessel stands on a slightly concave base. Throwing marks are evident on the interior and exterior. One handle is attached to the mouth just below the rim and to the body at the midsection. The glaze is a thick oxidised tin glaze and black in colour. The paste is cream to tan with a few gritty inclusions although there are few bare spots available for close examination.

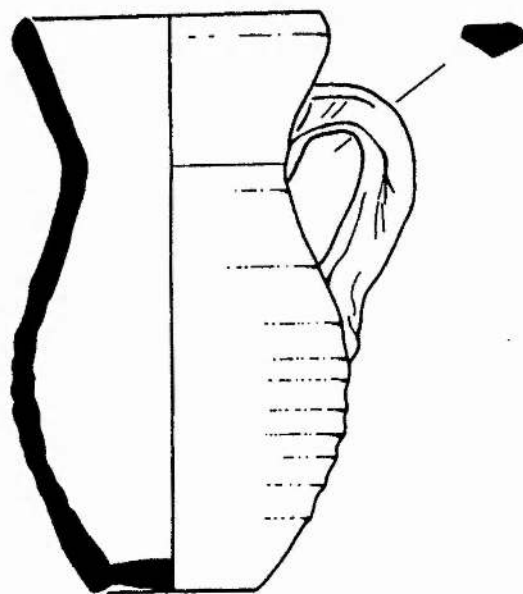


Fig. 5.45. 1724. Pitcher.

Fig. 5.46. *Columbia Plain*. 1724. A small pitcher similar to the above although more squat and with a larger handle. There are remnants of a worn and darkened tin glaze on the interior and exterior. The paste is cream coloured with small gritty inclusions. The lower body has pronounced grooves which may have been a decorative addition. The mouth and shoulders are well smoothed.

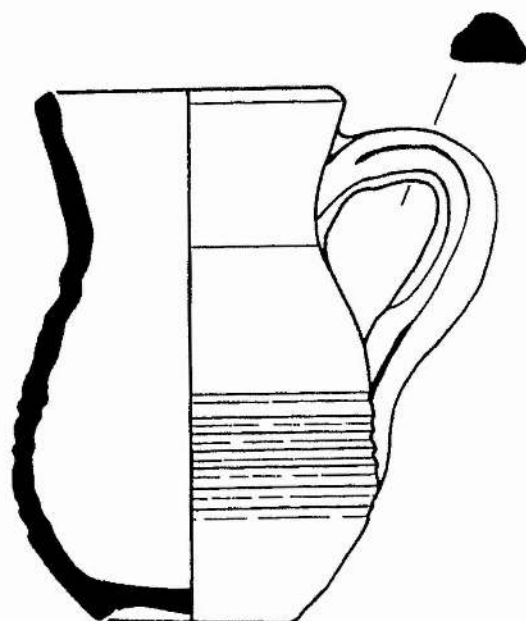


Fig. 5.46. 1724. Pitcher.

SUMMARY OF 18TH CENTURY FORMS

The two basic *Columbia Plain* forms, *platos* and *escudillas*, appear to occur with some frequency in the first part of the 18th century. Represented primarily by the finds from the *Tolosá* and *Guadalupe* wrecked in 1724 the wares are more uniform than earlier finds. The *escudillas* from the 1724 wrecks occur in quantity thus re-enforcing attribute generalisations.

The *escudillas* were likely formed over a mould on the wheel head and shaped on the exterior with a forming tool. Two measurements used to determine the uniformity of the examples are internal rim diameter and the width of the basal depression at the bottom of the bowls. **Fig. 5.47** shows the frequency of measurements for internal rim diameter on the collection. Sixty seven per cent of the examples had an internal rim measurement of between 121 mm and 122 mm, with the range for the collection or between 117 mm and 124 mm. **Fig. 5.48** shows the frequency of measurements for the depression at the

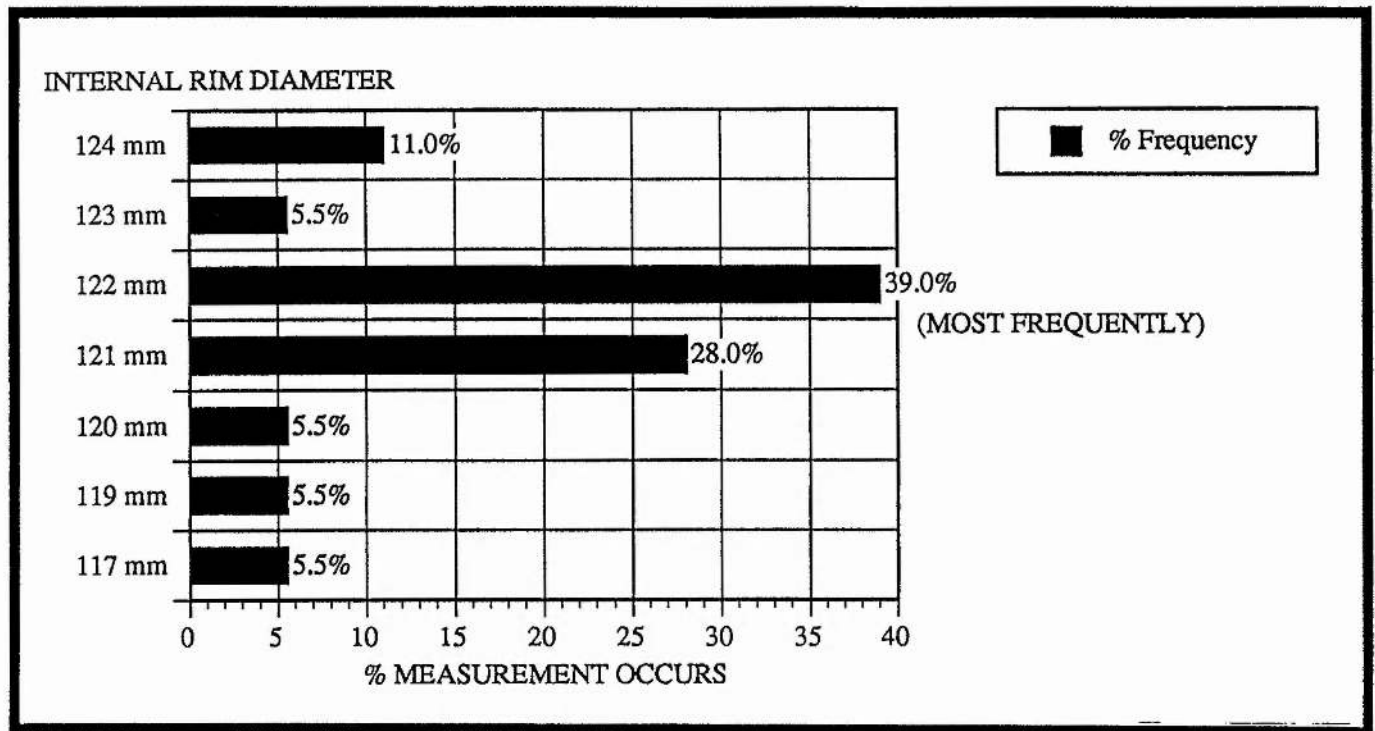


Fig. 5.47. Frequency of internal rim diameters of 1724 escudillas.

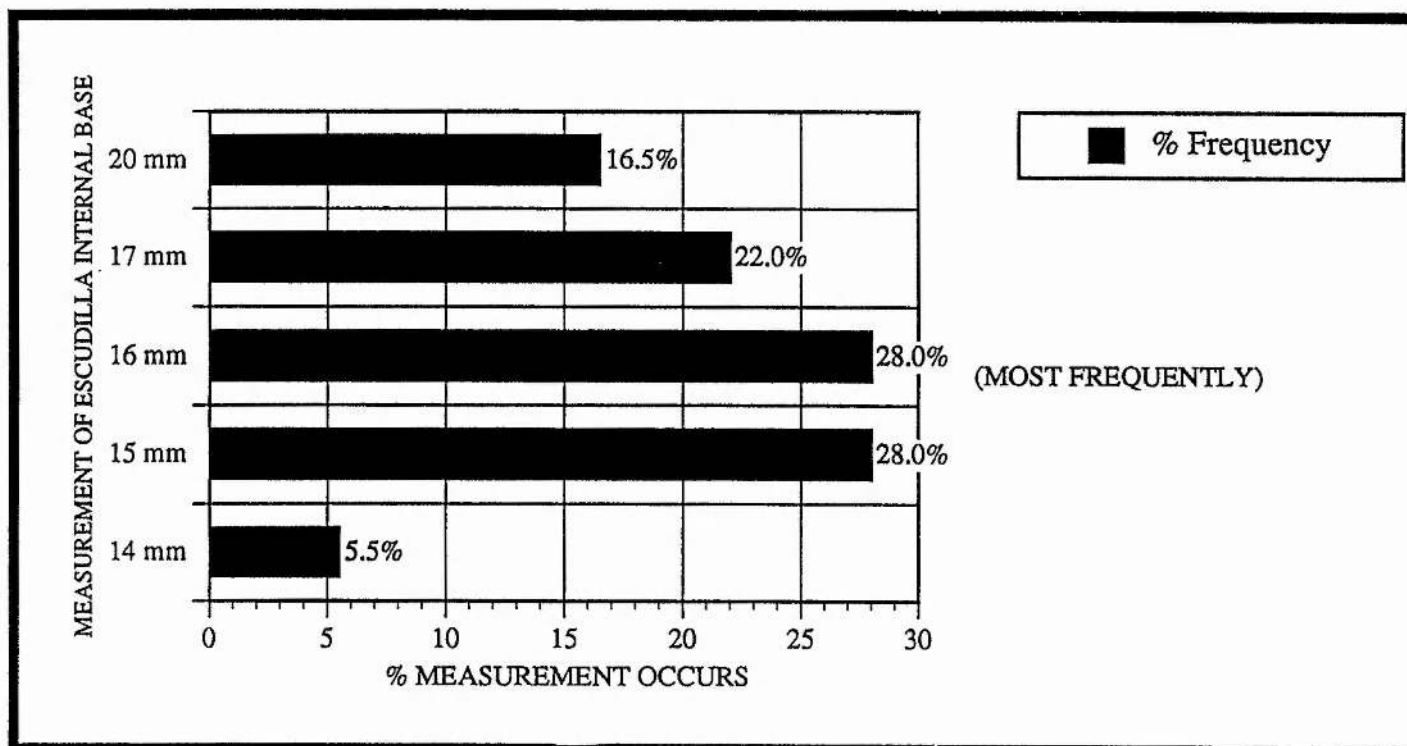


Fig. 5.48. Interior bases of escudillas. 1724.

center of the interior bowl. Fifty six per cent of the examples fall between 15 mm and 16 mm and within a range of between 14 mm and 20 mm. Such tight ranges would suggest the vessels were mass produced using wheel head moulds as size guides. The example from the 1733 wreck of the *San José y Las Animas* which was not recorded first hand, has similar internal rim measurements yet does not appear to have the identical central basal depression as illustrated by Logan (1977: Fig. 4c).

The *platos* from the two wrecks are also fairly uniform. The six examples from 1724 are readily distinguished from earlier forms using the surface texture of the paste as well as the intentional thickening of the rim which forms a slight lip. Other 18th century forms include two small pitchers with one handle and no spout.

CONCLUSIONS

ESCUDELLAS

Columbia Plain examples from the beginning of the 16th century are currently represented exclusively by finds from terrestrial sites. As more wrecks are discovered it is inevitable that comparative collections dated to the early 16th and late 15th century will be available in the near future. The Spanish wreck near Poole, England dated to the late 15th or early 16th century which is now being excavated may in time reveal examples of the ware.

Finds from the site of 16th century Qsar es-Seghir reported by Boone (1984) have provided a valuable starting point for a typological analysis of *Columbia Plain escudillas*. Boone was able to separate his finds into three principal time periods: an

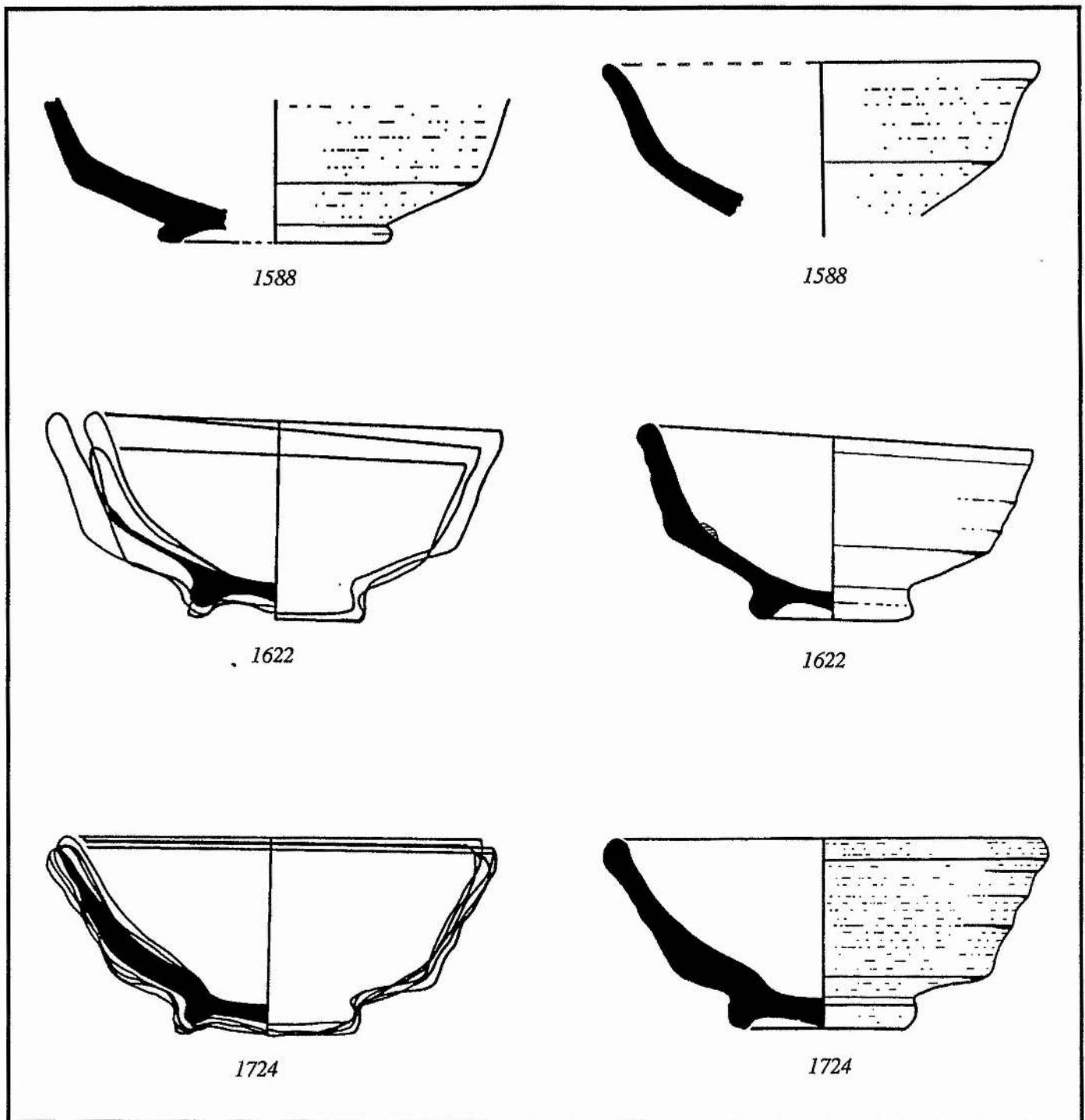
early period ranging from 1458 to 1495, a middle period from after 1495 to before 1520, and a late period from the late 1530's or 1540's (ibid.: 81). Both ring-footed and inset bases were present in the collection. Handles were reported in both lugged and raised "T" types and found to be associated with inset bases which also generally had a glossier glaze (ibid. 82). Intentional green tints in the glaze were also associated with the inset, glossy bowls with handles. Both handles, inset bases and glossier glaze treatments were associated with the earlier period of 1458 - 1495 (ibid.). Ring footed bases predominated the later period (1530's - 1540's) also suggested by Goggin (1968: 121) and were associated with a matt glaze, and a lack of handles (ibid.).

Escudilla finds from the Spanish Armada of 1588 did not include examples with handles or inset bases and it is suggested that inset bases and handles were scarce by the end of the 16th century. Examples from the late 16th century are found associated with a finer grade ware identified as *tin glazed earthenware* by Martin (1979: 286 - 289) or *Faenza White* (Deagan, 1987: 71; Lister and Lister, 1982: 76). Also noted in the Armada collections is the presence of decorative green glaze additions on the *platos* which does not occur in later contexts. The walls of the *escudillas* are more smoothed than later examples. There is an absence of throwing marks on the two bowls recorded suggesting a little more attention to aesthetic detail than the later finds. The one rim and body sherd is slightly thinner at the rim (between 5 mm and 6 mm) and has a slightly everted lip. Both diameters are approximate. The central bases are missing although they appear to be relatively smooth and lack the pronounced basal depression found in the 18th century collections.

The early 17th century *escudillas* resemble finds from the late 16th century and dating of the finds may rely on other type associations in addition to smoothing of the vessel walls. Finger shaping marks are more evident on the exterior walls above the carination point on 17th century examples compared to those from the late 16th century. The early 17th century assemblage is far less uniform in interior profiles than later examples and may result from the "off the hump" manufacturing process which would explain approximated interior shapes. The interior basal depression which dominates the 18th century examples is far less pronounced and in some cases barely discernible. Rim diameters range between 109 mm and 131 mm and wall thickness at the rim measures between 5 mm and 7 mm. Triple firing scars are also present on 17th century examples.

The 17th century *escudillas* did not include inset bases or handles although one tin glazed porringer was recovered from the 1622 *Atocha* site. The porringer has two lugged handles with scalloped design, a small ring-footed base and a form more closely related to *majolica* bowls of the period. The paste on the porringer is finer and the glaze is thick and intentionally crazed which is easily distinguished from typical *Columbia Plain*. The 1641 wreck of the *Concepción* did not include any examples.

The collections from the wrecks of the *Tolosá* and *Guadalupe* (1724) contain the largest assemblage of intact *escudillas* known to this researcher. The bowls are very uniform and exhibit surface turning marks that may have been caused by the rough surface of an exterior form or *jolly* used for shaping. Uniformity of the interior profiles suggests the use of a mould on the wheel head. The most frequent internal rim diameters



*Fig. 5.49. Escudillas from the 16th through the 18th centuries.
Overlays from 1622 and 1724 show form consistency in black.*

are between 121 mm and 122 mm. The early 18th century examples all exhibit a readily perceived central basal depression at the bottom of the interior bowl which is most frequently between 15 mm and 16 mm at the bottom. Vessel wall thickness is generally

greater than earlier examples and ranges between 80 mm and 100 mm. One example reported by Logan (1979: 23 - 24) from the wreck of the *San José y Las Animas* wrecked in 1733 has a similar form to the earlier 18th century examples with a slightly different central basal depression than those found on the 1724 assemblage. The exterior profile and sizes are similar. The wreck of the *San José y Las Animas* (1733) represents the latest examples of *Columbia Plain escudillas* from Spanish shipwrecks known to this researcher.

COLUMBIA PLAIN ESCUDILLA ATTRIBUTES

<u>DATE</u>	<u>GLAZE</u>	<u>INTERIOR</u>	<u>EXT. SIDES</u>	<u>BASE</u>
1458 - 1495	glossy off-white	well smoothed	well smoothed	inset
1530 - 1540's	off-white matte	well smoothed	well smoothed	ring-foot dominates
1588	off- white	well smoothed	well smoothed	ring foot exclusively
1588	**** associated with tin glazed earthenware, thinner walls, different forms (Faenza White) ****			
Early 17th c.	off-white oxidised	smoothed	throw marks	ring foot exclusive
1622	*** one porringer with lug/scalloped handles with finer paste, thick greyish glaze, different form ***			
1641	**** the wreck of the Concepción did not have any examples: Mexican majolica was used ****			
1724	off-white oxidised	smooth/basal dep.	linear+throw marks	ring foot exclusive
1724	**** examples are very uniform and look as though they were formed with a wheel head mould ****			
1733	off-white	smooth/some dep.	throw marks	ring foot
1733	**** based on one description by Logan (1977) from the San José y Las Animas ****			
1766	**** the wreck of the El Nuevo Constante did not have any Columbia Plain examples ****			

PLATOS

One *plato* was recorded from the Padré Island shipwrecks of 1554. It included blue decoration and is identified as *Yayal Blue on White* which has been described as a decorated *Columbia Plain* (Hurst, 1986: 59). The one example exhibits exterior throwing marks which differs from the majority of the 16th century examples. *Columbia Plain plato* finds from the late 16th century are represented by the collection from the Spanish Armada of 1588. The *platos* are well smoothed with thinner vessel walls (averaging 8 mm) than later examples. Triple firing marks are present. The rims are slightly everted. Heights of the Armada examples are appreciably less than later finds at approximately 38 mm.

Confined to the 16th century are the additions of a decorative green glaze (plates dipped half in green) and incised marks found scratched on the bottom of the *platos*. Scratched marks were recorded from early 16th century Qsar es-Seghir and do not occur on recorded examples later than the 16th century. The Roman numeral marks are considered to be production batch marks (Martin, 1979: 286) while it is possible that marks recorded by Goggin (1968: 119) may be owners' identification marks.

Platos from the 16th century are distinguished on the interiors by a central obverse ridge near the base and a definitive raised hump or "central boss" on the center bottom. The 1588 Armada examples are the last recorded *platos* which exhibit the central raised hump or "boss" and it should be considered an important temporal indicator. Goggin also noted that the central "boss" did not occur in the later periods (1968:121). One

example is overly lop-sided when sitting on its concave base. This confirms that little care was taken in their manufacture or possibly that table settings were not the common practise for common folk and that *platos* were held while the food was eaten. (This would also make sense on a rolling ship.)

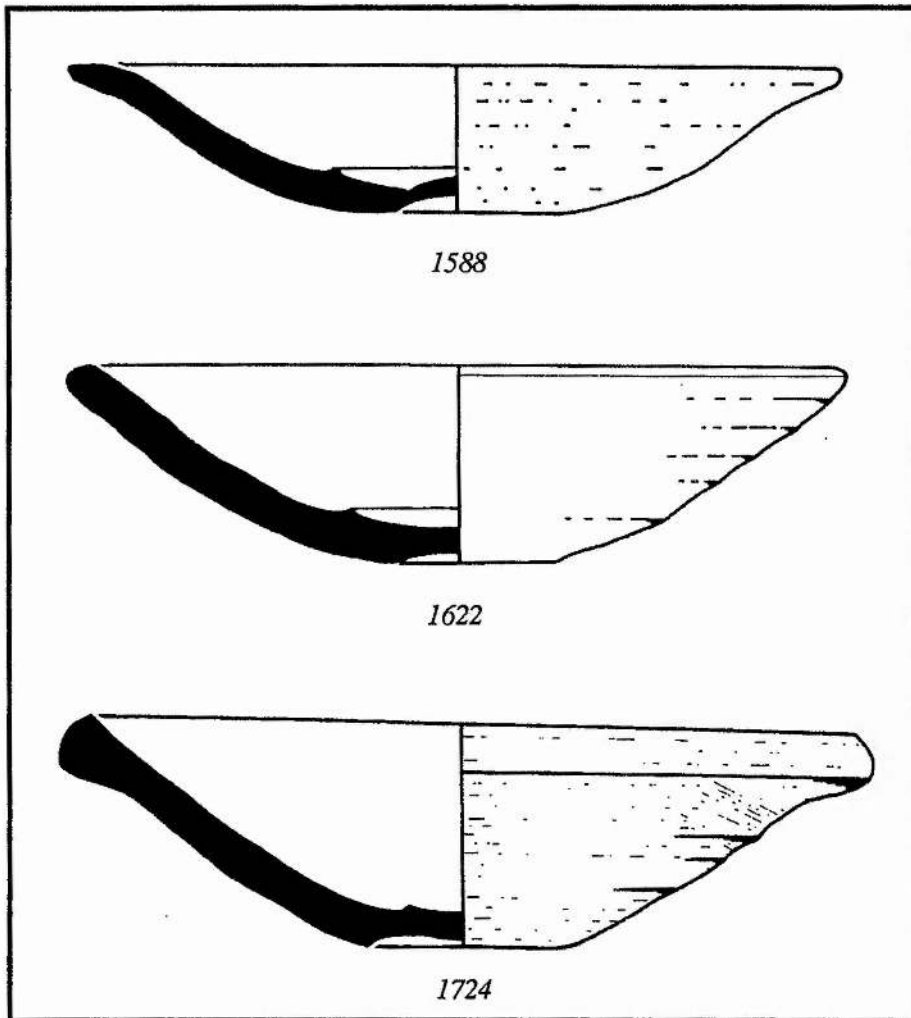


Fig. 5.50. *Platos* from the 16th through the 18th century.

The early 17th century is represented by finds from the 1622 wreck of the *Atocha*. The *platos* recovered are fairly similar with throwing marks evident on the exterior walls. The interior profiles are slightly more “U” shaped than earlier and later examples. All examples have the central obverse ridge near the centre base yet the characteristic raised hump or central “boss” is not in evidence

throughout the collection. All examples were recovered with a thick glaze that was oxidised to a blackish colour. There are no examples with any green glaze decorative additions. Walls are thicker than earlier examples and approximate 10 mm.

The 18th century *platos* are the most uniform and are distinguished by a more compact and slightly darker tan paste than earlier examples. The surface treatment of the exterior paste differs from earlier *platos* and is identified by a texture similar to the *escudillas*. Vessel walls are thicker in some examples and measure between 10 mm and 12 mm. The interior profiles are fairly consistent. A feature which pervades the assemblage is a more pronounced and thicker rim than earlier examples. The interior bases exhibit a central obverse ridge but lack a raised hump or central boss. Another distinguishing characteristic of the 18th century *platos* are the exterior countersunk bases which convex towards the centre, forming a little hump, compared to the 17th century examples which are more concave.

COLUMBIA PLAIN PLATO ATTRIBUTES

<u>DATE</u>	<u>GLAZE</u>	<u>RIM</u>	<u>WALLS</u>	<u>INT. BASE</u>	<u>HEIGHT</u>
1588	off-white/green	slightly everted	thin (8 mm)	ridge + hump	38 mm approx
1588	**** associated with tin glazed earthenware, thinner walls, different forms (Faenza White) ****				
1622	off-white oxidised	slightly "U"	thicker (10 mm)	ridge no hump	52 mm approx
1641	**** the wreck of the Concepción did not have any examples: Mexican majolica was used ****				
1724	off-white oxidised	thickened	thicker (10 - 12 mm)	ridge no hump	58 mm approx
1724	**** exterior concave bases convex towards the center and differ slightly from earlier examples **** ***** the paste is more compact and tannish in colour *****				
1766	**** the wreck of the El Nuevo Constante did not have any Columbia Plain examples ****				

OTHER FORMS

The most common *Columbia Plain* forms besides the *platos* and *escudillas* are larger serving bowls with forms similar to *platos*. One example from the Spanish Armada of 1588 is similar to examples recovered from the 1622 wreck of the *Atocha*. A *Columbia Plain* mortar from the Armada is paralleled by one found on the *Atocha*. The presence of a less utilitarian *tin glazed earthenware* or *Faenza White* occurs only in 16th century contexts and its association can probably be used for temporal differentiation.

The largest variety of *Columbia Plain* forms comes from the 1622 wreck of the *Atocha*. Forms include a mortar, a chamber pot, serving bowls with inset bases, and a flat-bottomed bowl. Serving bowls with ring-footed bases have also been recorded from 1622 with one similar decorated example from the 1621 wreck of the *San Antonio* identified as *Santo Domingo Blue on White*. Also from the *Atocha*, in addition to a variety of tin glazed handles, is a small spout with *Columbia Plain* paste glazed emerald green. It is the only example of its kind. Other forms from the 18th century include two tin glazed pitchers from the wrecks of the *Tolosá* and *Guadalupe* (1724).

SUMMARY

Columbia Plain predominates New World terrestrial and shipwreck sites in the Americas. Its temporal range begins in the late 15th century where it was a natural extension of simple Moorish utilitarian ware which had been produced in the region for generations. It occurs on shipwreck sites through the early 18th century (1733). The

finds from shipwrecks have helped to create a typological foundation for the two most common forms. Goggin's contention was that the type had a gradual "waning of oriental and medieval styles and a general degeneration in shaping" with "greater thickness of vessels, poorer shaping, and warping indicative of the decline in technique" (1968: 121-122). Finds from the wrecks in the early 17th century clearly exhibit less care in aesthetics than 16th century finds as evidenced by the thicker walls and lack of smoothing on the exterior walls. The finds from the 1724 wrecks of the *Tolosá* and *Guadalupe*, however, exhibit a greater standardisation than the 17th century examples which may be due to a more efficient manufacturing technique. Vessel walls do tend to increase over time in support of Goggin's contention (ibid.).

Some of the wrecks studied, however, did not include examples of the ware. On the 1641 wreck of the *Concepción*, for example, in place of *Columbia Plain* are large numbers of Mexican *majolicas* identified as *Fig Springs Polychrome* (Goggin, 1968: 151 - 154) also called *San Juan Polychrome* (Lister and Lister, 1982: 14, and 1974, 1975, 1978) and ring-footed bowls identified as *San Luis Blue on White* (Goggin, 1968: 154 - 158). Forms included brimmed plates, undecorated ring-footed bowls and several small drinking cups with rounded bellies and everted rims. Descriptions will follow in the section on *majolica*.

The question of the absence of *Columbia Plain* from this wreck is an intriguing one. As described in Chapter 3, the *Concepción* was a New World-built ship and had made the Spain to Veracruz route and back several times before her eventual wrecking in 1641. It is entirely probable that because she was outfitted in the New World her necessary

pottery provisioning was done with the local variety instead of the imported *Columbia Plain*. The *Atocha*, only twenty years before, also built in the New World, was sent back to Spain without cargo and only a skeleton crew to be outfitted in Seville. This would explain why *Columbia Plain* examples were common on the wreck. The *Atocha* had also not engaged in any direct trade with Mexico as did the *Concepción*.

It is apparent that the port of initial provisioning plays an important part in the type of utilitarian ware one encounters on Spanish wrecks. It seems unlikely that *Columbia Plain* wares were replaced by Mexican-made *majolicas*, except when provisioning was done at New World ports. Because the *Concepción* was a New World-built ship and outfitted there, it is suggested that initial port of provisioning determines to some extent the types of wares encountered on corresponding wrecks. *Olive jar-type botijas* found on the *Concepción* wreck, however, are believed to be of Andalusian origin.

Shipwreck finds have increased the estimated time period for *Columbia Plain* by nearly 100 years. Its terminus is now believed to be somewhere in the mid 18th century. A review of the ceramic materials from the wreck of the *El Nuevo Constante* (1766) housed in the Louisiana State Museum in Baton Rouge, Louisiana, did not reveal any *Columbia Plain* examples. The initial report on the wreck also did not include mention of *Columbia Plain* with the majority of the finds reported to be *Tonala Ware* presumably made in Tonalá near Guadalajara (Pearson, 1982: 26 - 31). Historical research on the *Constante* reported that *losa de Guadalajara* was listed on the manifest which may have referred to tableware (ibid.).

At the time of the *Constante's* wrecking Seville had lost its importance as a port and although originally an English ship the *Constante* was purchased for New World trade by a Cadiz mercantile family and outfitted in Cadiz (ibid.: 3). Exclusion of *Columbia Plain* on the *Nuevo Constante* (1766) would suggest that its use as shipboard tableware and for export on colonial trade ships may have been discontinued by the middle of the 18th century during a time that the Indies trade was experiencing virtual stagnation.

OTHER POTTERY TYPES

INTRODUCTION

It is the aim of this study to provide reliable typologies based on accurately dated shipwrecks of the two most common pottery traditions: *olive jar-type botijas* and *Columbia Plain*. Because pottery is subject to the whims and individual skills of potters, it is important to include supporting data when using the typologies as a guide. The other wares encountered on each of the wrecks are presented here because of their direct association with the above types. In addition to helping to define temporal associations, occurrence on a specific wreck of known date helps to define accurate date ranges for the other wares.

The chapter follows the same format as the previous two. The pottery is grouped by type and presented chronologically. More scholarly attention has already been paid to these wares, and they are included here simply to expand the corpus of well dated material.

TINAJAS

Perhaps the most impressive of all ceramics recorded for this study are large inverted pear-or heart-shaped vessels called *tinajas*. They were first encountered by this researcher on the wreck of the *Atocha* (1622). Two intact vessels were recovered and a third reconstructed. Sizes of the vessels are formidable, ranging from almost 70 cm to 80 cm in height with widths at their maximum diameters between 58 cm and 69 cm. They sit on a proportionately small, slightly countersunk bases. Two distinct paste types were recorded.

The first and most common is very similar to *olive jar-type botija* fabric although the core is a lighter brown with several large gritty inclusions of different mineral appearance. Some paste particles look micaceous and others have a white quartz-like appearance. Surface textures are smooth with inclusions clearly visible on the exterior and interior walls which are light tannish-grey-pink in colour. Surface decorations include two tandem wavy bands each about 8 mm thick separated by an 8 mm space. The bands each have eight small grooves. Throwing marks are not visible on the exterior or interior vessel walls. Construction techniques may include forming the base on a board and continually adding coils of clay after the vessel walls dried enough to support its own weight. Vessel walls are c. 25 mm thick.

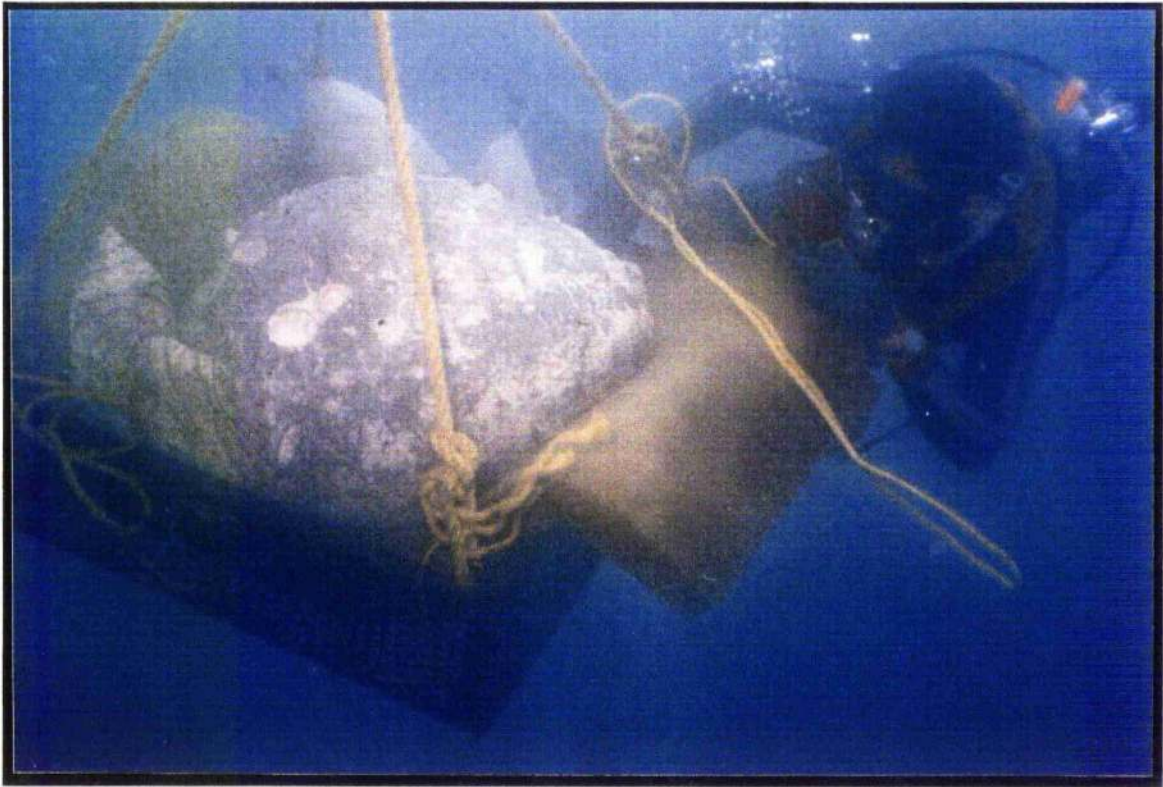
The second type of paste is more brick red in colour and is associated with walls slightly thinner at c. 20 mm. Also encountered on the 1622 wreck, complete vessels in this paste were not recovered although it is speculated that the form was fairly similar although probably smaller than the first type. Several body sherds and one rim sherd support this contention. The paste has fewer mineral inclusions, is well smoothed with a white-slip like appearance.

Goggin illustrated mouth details of "extremely large vessels of *olive jar* paste" although they were not analysed in his study (1960: 12, fig.4). Large storage jars have also been identified in *olive jar-type* paste in colonial contexts throughout the Caribbean and at the site of Caparra, Puerto Rico in a handleless *bacín* form with incised wavy lines encircling the vessel below the rim (Deagan, 1987:36). The forms encountered in this study are most similar to the *tinaja* shape although there is some resemblance to *orzas* which have a circular body form, thickened rim, rounded bases and no handles, primarily used as water storage containers and now

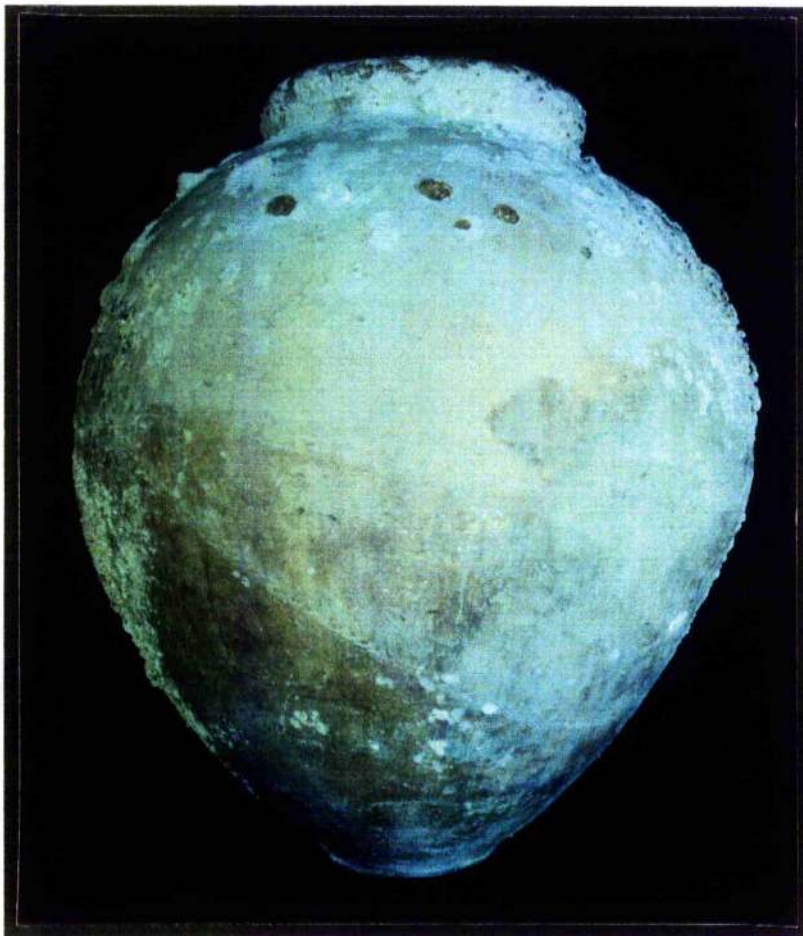
in evidence in Santo Domingo, San Juan and Havana (Deagan, 1987: 38 - 39).

The Listers have illustrated a *tinaja* which resembles the form closely (1987: 100; Fig. 55f.) and reported that "great, high-shouldered jars for the storage of various provisions were so commonly used in warehouses that structures were described as having the capacity of a prescribed number of *tinajas* " (Lister and Lister, 1987: 62). The *tinaja* tradition of storing water in quantities in the hot Andalusian climates had probably been in existence for centuries, through Muslim and Christian times, with markings in stamped or etched patterns in evidence, and useful in determining their specific cultural affiliation (Lister and Lister, 1987: 101, 113). For use on the trans-Atlantic crossings, documentary sources have described large earthenware vessels that were placed around the ship as water dispensers (Colin Martin, 1986: pers. comm.). It is probable that the *tinajas*, like the *olive jar-type botijas*, had a Sevillian origin.

For identification purposes, the paste and forms are easily differentiated from *olive jar-type botijas*. Examples from the shipwrecks recorded for this study begin in the early 17th century with the *Atocha* (1622) *tinajas*. There was no mention of the type in reports covering the 1554 Padré Island wrecks or evidence in the part of the 1554 collections at the Corpus Christi Museum. The type is also absent among the finds from the Spanish Armada of 1588. The three vessels from 1622 are of similar shape, form, and paste, although there is a variation in size which suggests a general specification rather than a specific capacity was intended. The three intact vessels and another complete rim and base sherd suggest that at least four of this type of vessel were present on the *Atocha*. There is no evidence of pitch used for sealing corks. Decoration on the vessels are simple wavy bands running in a random diagonal configuration around the upper shoulder of the vessel, and around the mid-



*Plate 6.1. A diver
recovers a tinaja
from the 1622 wreck
of the Atocha.
Courtesy Tom Ford.*



*Plate 6.2. A tinaja
from the 1622 wreck
of the Atocha.*

section or at angles from the base. Wall thickness measures from 2.7 cm to 3 cm.

Fig. 6.1. *Tinaja*. 1622. Plate 6.2. An intact *tinaja*, the largest of the three whole vessels found on the *Atocha*. The rim is slightly everted and thickened. The walls angle

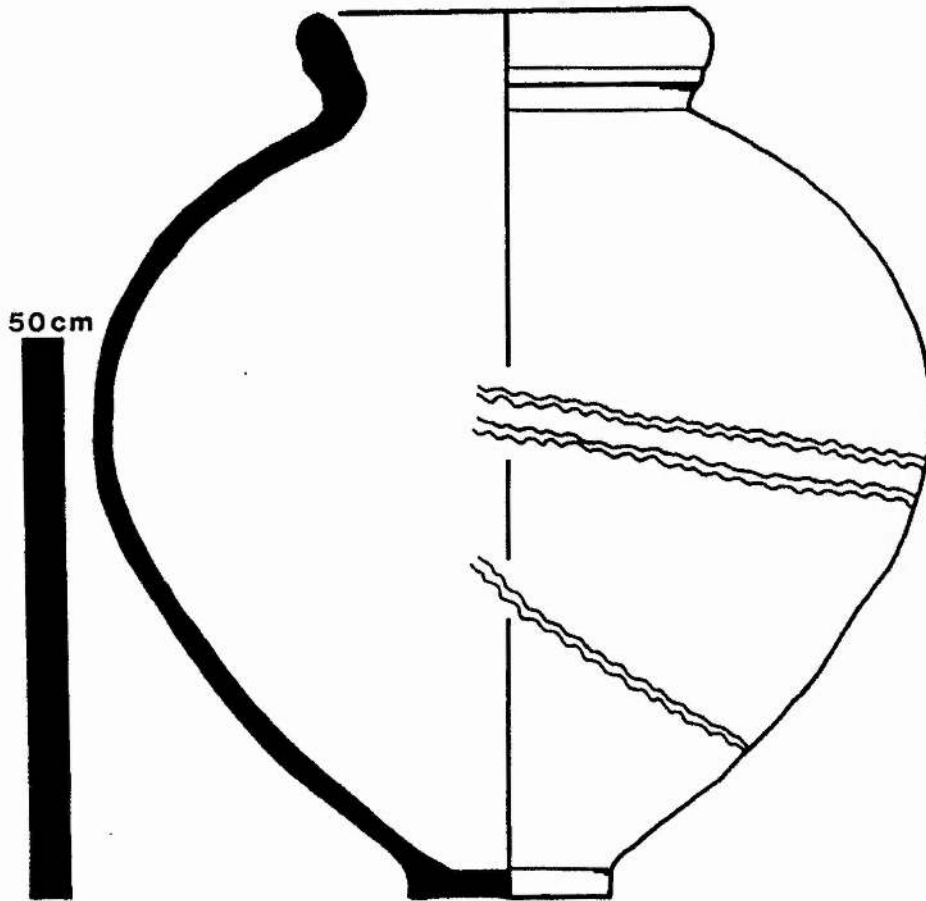


Fig. 6.1. 1622. *Atocha*. Intact *tinaja*.

outwards from the neck at a sloping curve then revert at the mid-section sloping inward to a relatively small flat base. The exterior walls are decorated with a pair of characteristic double incised lines that encircle the middle and one set that is angled up from near the base. The paste is light tan to pink with grey to

dark grey core. Rim thickness is 4.5 cm in places. Neck and body thickness 3 cm. Height 80.1 cm. Maximum diameter 69 cm. Rim diameter 35 cm.

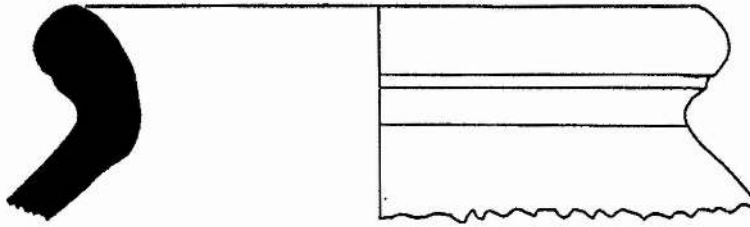


Fig. 6.2. 1622. Atocha. Tinaja rim profile at 1/4 scale.

Fig. 6.3. *Tinaja* sherd. 1622. This sherd illustrates the type of double incised wavy lines described. The impression was probably made by a wooden tool with a space notched out from the center for the separation of the two lines.

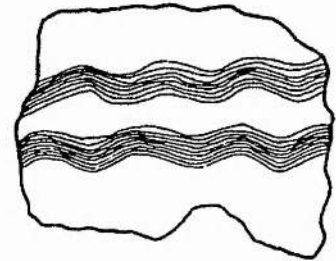


Fig. 6.3. *Tinaja* sherd 1/2 scale.

Fig. 6.4. *Tinaja*. 1622. A shorter and smaller example, this *tinaja* has similar paste

50 cm

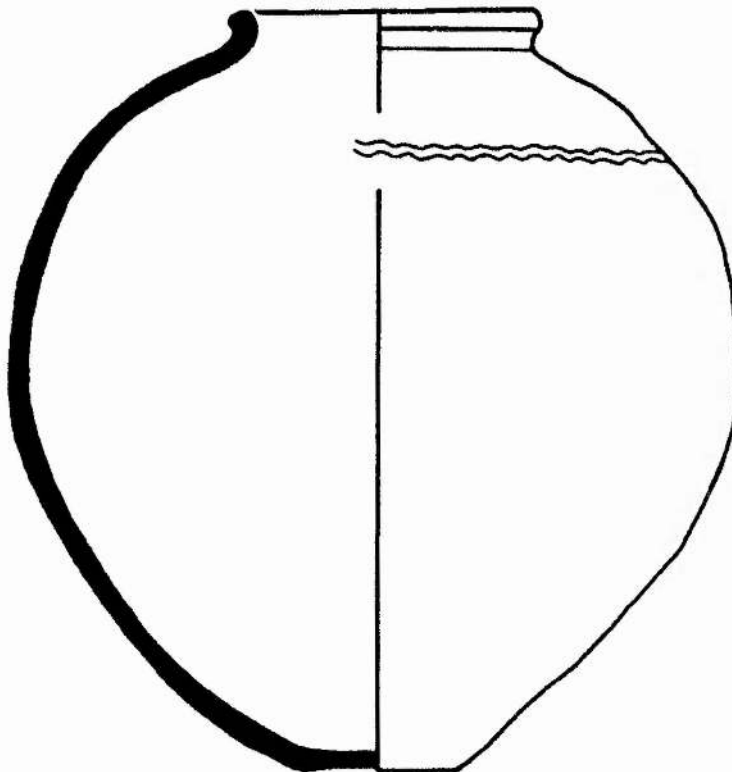
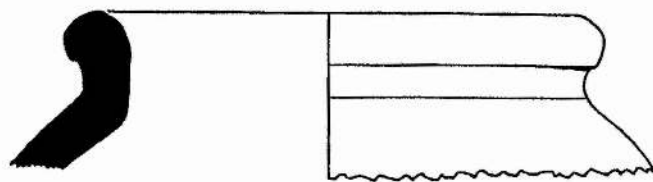


Fig. 6.4. 1622. Atocha. *Tinaja*.

and form although the rim is smaller and less thickened. The decoration consists of a double incised wavy line encircling the jar on the shoulder. The overall impression is a more squat appearance as the sides near the base have a proportionately wider circumference towards the bottom. Height is 69.2 cm. Maximum



diameter is 63 cm. **Fig. 6.5.** Rim diameter of above is 29 cm.

Fig. 6.5. 1622. Tinaja rim profile. Scale 1/4.

Fig. 6.6. Tinaja. 1622.

The rim profile of a *tinaja* found intact with a more narrow shape than the two others. Incised wavy bands encircle the

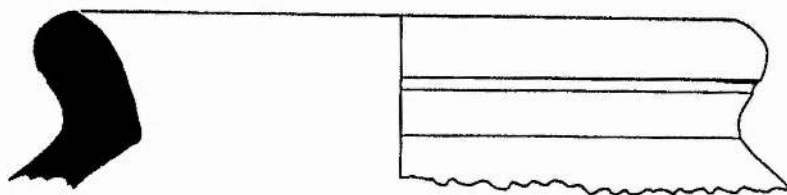


Fig. 6.6. 1622. Tinaja rim profile. Scale 1/4.

jar at the shoulder. The rim is everted and slightly thickened. The paste is similar to the above examples, thick with numerous inclusions and a greyish core. The exterior is covered with marine growth. The reconstructed height is 70.8 cm. The maximum diameter is 58 cm., and the sides near the base taper at a sharper angle than the previous example to give a slimmer appearance. The rim diameter is 33 cm.

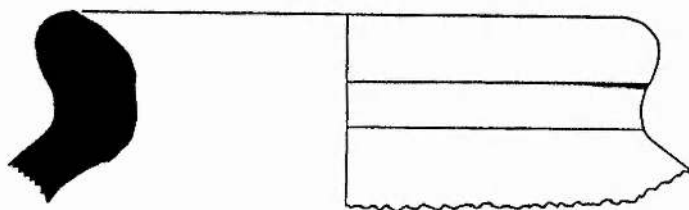


Fig. 6.7. 1622. Tinaja rim profile. Scale 1/4.

Fig. 6.7. Tinaja rim. 1622. The fourth rim sherd recovered has a less pronounced thickening of the rim which everts slightly.

Fig. 6.8. Tinaja base. 1622. This base profile shows a slightly concave form. In addition to this base and the above rim, 98 body sherds were recovered with some exhibiting the incised decoration.

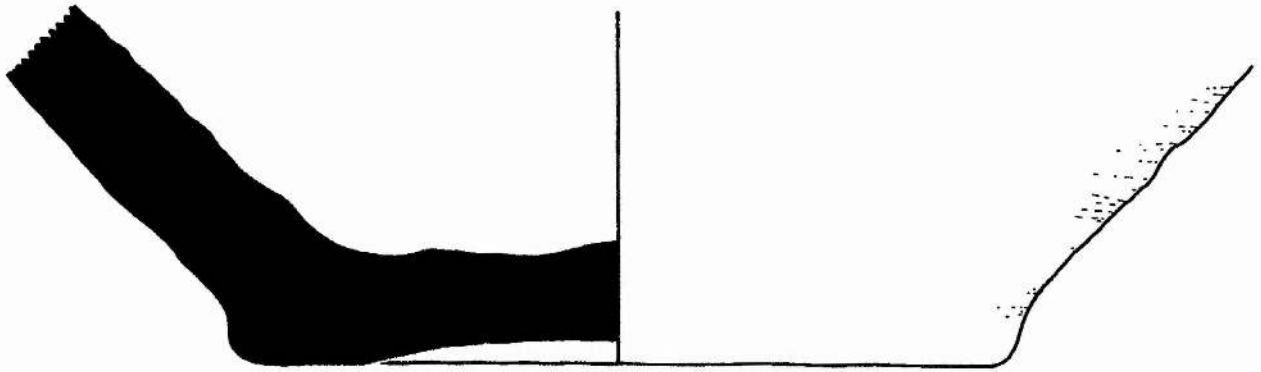


Fig. 6.8. 1622. *Tinaja* base profile. Scale 1/2.

Also in the 1622 collection were 8 sherds of thick (between 1.8 cm to 2 cm) brick-red coloured paste. **Fig. 6.9. 1622. Red Paste *tinaja*.** This rim sherd was too small to determine an approximate circumference although it appears to be from a large *tinaja* or similar storage con-

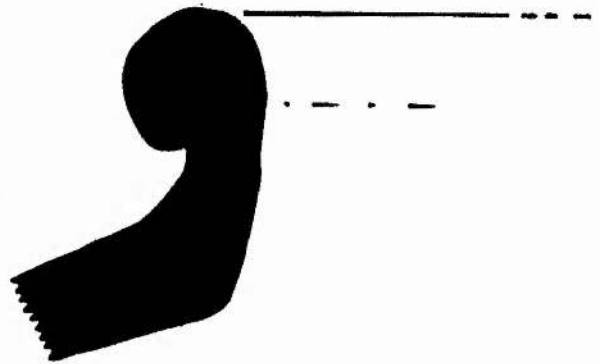


Fig. 6.9. 1622. Red paste *tinaja*. Scale 1/2.

tainer. Throwing marks are visible although pronounced finger throwing grooves are not evident. The surface has been smoothed with a rough cloth or tool. The rim was added and applied in the same fashion as the *olive jar-type botijas*. The paste is dark red brick in colour with creamy tan exterior which looks like a slip or may be an effect of the firing process or wreck deposition. There is little visible tempering although some small inclusions are present. It is not known from the limited finds what actual form or base the vessels had. The paste is easily differentiated from the other *tinaja* examples.

In the 18th century, the wrecks of the *Tolosá* and *Guadalupe* (1724) also carried large *tinajas*. At least three examples exist and were viewed at the Museo de las



Plate 6.3. 1724. Tinaja from the Tolosá or Guadalupe. Santo Domingo.



Plate 6.4. 1724. Tinajas from the Tolosá or Guadalupe on display at the Museo de las Casas Reales. Santo Domingo, Dominican Republic.

Casas Reales as part of the wreck display. Restrictions on time did not permit illustration of the vessels. **Plate 6.3.** shows one of the examples with an approximate height of 65 cm. The scale on the left is 20 cm. The vessel is similar to the earlier examples although the rim is noticeably raised with vertical sides and a thickened lip. The shoulders are almost perpendicular before sharply curving towards the midsection. The general form is more heart-shaped than the 1622 finds. The lower body is more vertical before the curve towards the shoulder begins.

Two other *tinajas* in the exhibit (**Plate 6.4**) include a larger and smaller form. The larger has a similar rim although with a less pronounced thickening. The shoulders are more square than earlier examples. The smaller is similar to the first 1724 example and is easily differentiated from earlier *tinajas*.

From the examples recorded, differentiations can be made between early 17th and early 18th century forms. The two most distinguishing attributes which may prove to be temporal indicators are the raised and thickened rims and the squarer shoulder of the later examples. Paste for both 17th and 18th century finds is similar.

Further research and a larger sampling of finds will be necessary before tight conclusions can be reached about changes in form. It seems more than coincidental at this point that the two wrecks with the greatest number of *olive jar-type botijas* are also the ones which include examples of *tinajas*. The general size of the vessels indicate that they were used for holding large amounts of liquid, probably water. If timber was in short supply, the inclusion of large *tinajas* would suggest a substitute for barrels. Ceramic containers would also serve to keep the contents cooler and may have simply been the preferred method for storing. If the vessels were used to

dispense water while underway, lack of corks and resin for sealing may be explained as an easier way to seal the jars while not in use would be a tapered wooden stopper with a handle. Complete lack of wood for barrels is not supported by the large quantity of barrel hoops recovered from the site of the *Atocha*.

COARSE EARTHENWARE

MERIDA-TYPE WARES

Originally identified in the 1960's by John Hurst as a distinctive orange-red micaceous paste ware produced 60 kilometres from the Portuguese border in Merida, Spain, his continuing research determined that the type was more likely produced in Alentejo, Portugal where the types are still made (Hurst, 1986: 69, after Parvaux, 1968). The paste is fine sandy micaceous fabric with "medieval examples tending to be rougher and brown while the 16th and 17th century fabric is harder, finer and usually red-brown to orange-red"(ibid.). Because the term *Merida Ware* has been used over the last 20 years and an exact kiln source has yet to be pinpointed, Hurst has suggested that the type be re-classified as *Merida-Type Ware* (ibid.).

Reported forms consist of bowls, jars, wide necked jugs, globular costrels, *olive jar-type botijas*, and vases in the form of birds and chafing dishes (ibid.: 69 - 70). A ware encountered in American colonial contexts matching the descriptions of *Merida-Type Ware* has been identified as *Orange Micaceous* by Council (1975: 131 -133, from Deagan, 1987: 40) and Deagan (1987: 40). The colonial examples are recorded as having smooth vessel surfaces often scraped and normally unglazed with occasional remnants of a thin orange or red coloured slip (Deagan, 1987: 40). Other indicative treatments are vertical striations on the exteriors which are the result of scraping the unfired surface and decorations of incised lines, moulding, and short horizontal linear decorations, with some post-1550 examples having inlaid chips of feldspar (ibid.).

16TH CENTURY EXAMPLES

The earliest wreck finds of *Merida-Type Ware* known to this researcher are from the early 16th century Studland Bay wreck near Poole, England, and consist of 3 or 4 red micaceous costrels both glazed and unglazed (Hurst, report on file). *Merida-Type Ware* constitutes a homogeneous group found on the Spanish Armada (1588) wrecks of the *Girona*, *Santa Maria*, and *Trinidad Valencera* (Martin, 1979: 290). The examples are described as well made and thin walled with throwing marks pronounced on the interior walls with the exterior walls "shaved smooth with a turning tool at the leather-hard stage to achieve a wall thinness which would, in some cases, have been mechanically impossible while the clay was in the plastic state" and finished with a self-slip applied by a wet cloth or sponge (ibid. 291 - 292). Forms from the Armada include large storage jars with handles, small jars and pots, basins and bowls of various sizes which are recorded in detail in Martin's work (1979). The

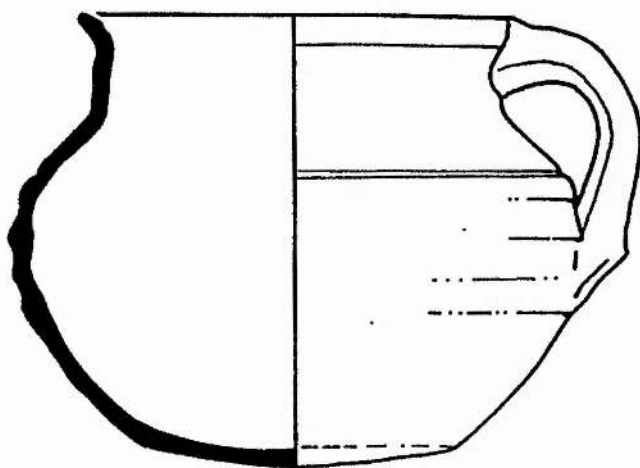


Fig. 6.10. 1588. Spanish Armada. *Merida-Type Ware*.

wares from the Armada collection were believed to have been made "almost certainly" in or close to Lisbon (ibid.: 291).

Recovered after Martin's publication (Fig. 6.10. 1588. *Merida-Type Ware*.) this example is a one handled rounded bowl or small pitcher. The rim lip is everted and thin walled, continuing straight sided to a globular body with a

slightly rounded base. An incised line runs on the shoulders above the mid-section. The handle attaches at the rim and is connected at the middle. The paste is reddish-brown with what looks to be the remains of a brownish "self-slip". **Plate 6.5.**

17TH CENTURY EXAMPLES

Other examples of *Merida-Type (Orange Micaceous Ware)* were recorded from the wreck of the *Atocha* (1622) and are comprised of five distinct forms with slightly varying pastes. The wide range of paste types described for *Merida-Type Ware* ranging from more brown with rougher paste for the Medieval examples (Hurst, 1986: 69) to an orange-red compact paste recovered in colonial contexts makes the type categorisation extremely broad. The examples recovered from the *Atocha* wreck can be classified as *Merida-Type Ware* under these wide descriptive parameters.

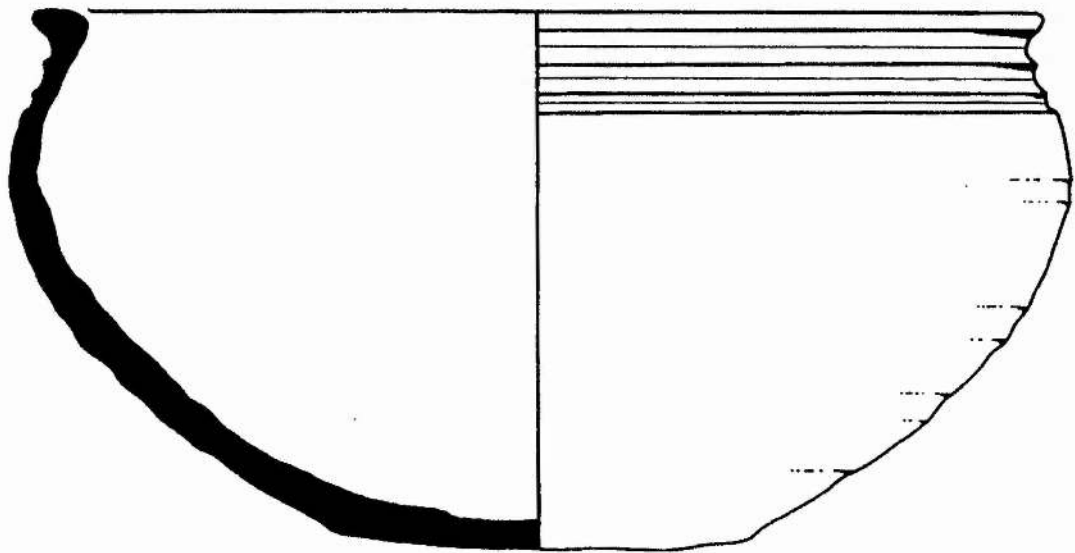


Fig. 6.11. 1622. *Atocha*. Merida-Type Ware bowl. Scale 1/2.

Fig. 6.11. is a wide bowl with an everted lip and grooves just below the rim. The rounded body sits on a flattened base. Vessel walls are slightly thicker than earlier examples with slight finger throwing impressions on the exterior and interior walls. The paste is orange-red with numerous micaceous inclusions. The example consists of one sherd comprising the rim, body and base of the vessel. **Plate 6.6.**

Fig. 6.12. *Atocha*. 1622. Also recovered from the *Atocha* is a sherd comprised of a narrow base and flaring walls. The flat base is everted at the bottom where it is thickened with the vessel walls getting thinner as they head towards the mid-section. The paste is an orange-red with a thin section of grey on the exterior below an orange-red slip. The exterior walls are fairly well smoothed with throwing marks evident on the interior walls and base. **Plate 6.7.**

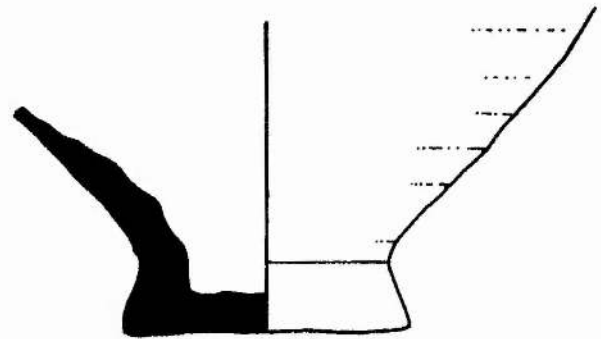


Fig. 6.12. 1622. Atocha. Merida-Type Ware. Scale 1/2.

Fig. 6.13. *Atocha*. 1622. A handle, rim, and shoulder sherd of a brownish-grey fabric with visible mineral inclusions. Its form closely resembles the example (**Fig. 6.10.**) recovered from the Armada although slightly larger. There is no evidence that the lip is everted like the earlier find, however the sherd is worn smooth

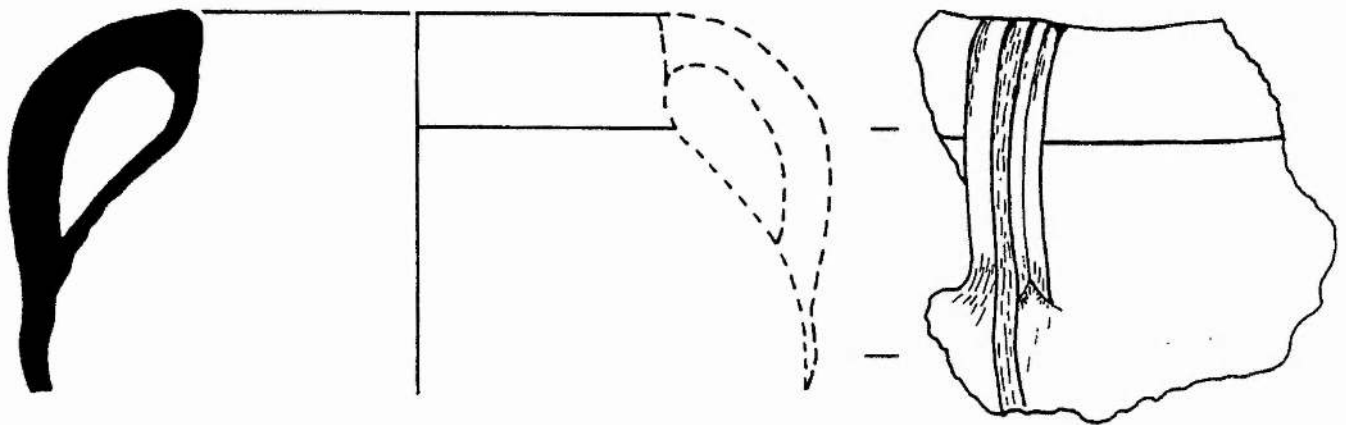
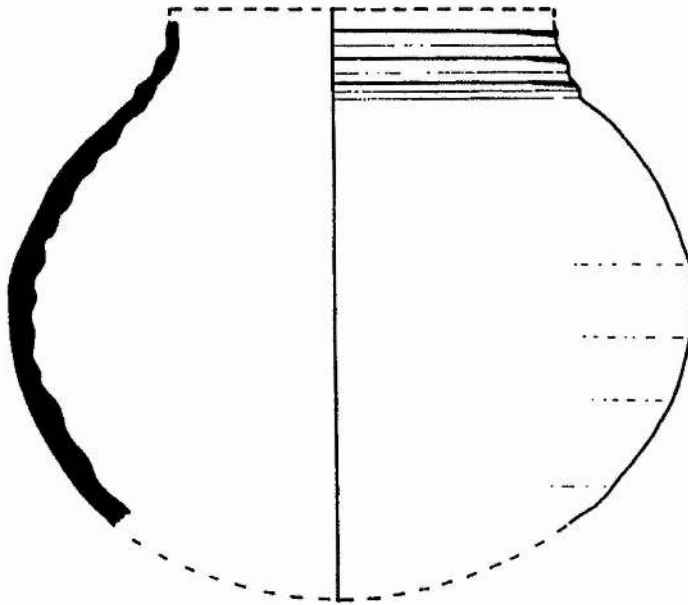


Fig. 6.13. 1622. Atocha. Merida-Type Ware. Scale 1/2.

from its post-wreck deposition. There is no evidence of a slip. The exterior is well smoothed (or worn) with throwing marks visible on the interior walls.

Fig. 6.14. *Atocha*. 1622. **Plate 6.8.** This sherd is the partial body and neck of a small



bowl or cup. The paste is compact brownish-grey with a hint of red and few visible inclusions or tempering. The exterior is well smoothed and covered in a dark red-brown slip. Throwing marks can be perceived on the interior walls. Estimated maximum diameter is 17 cm..

Fig. 6.14. 1622. Atocha.
Merida-Type Ware. Scale 1/2.

Fig. 6.15. *Atocha*. 1622. **Plate 6.9.** A complete bowl with an everted rim and angled sides which invert to a flattened base below the mid-point of the vessel. The paste is a brownish-red with micaceous inclusions. The exterior is smoothed although some throwing marks can be perceived. Throwing marks are visible on the interior walls.

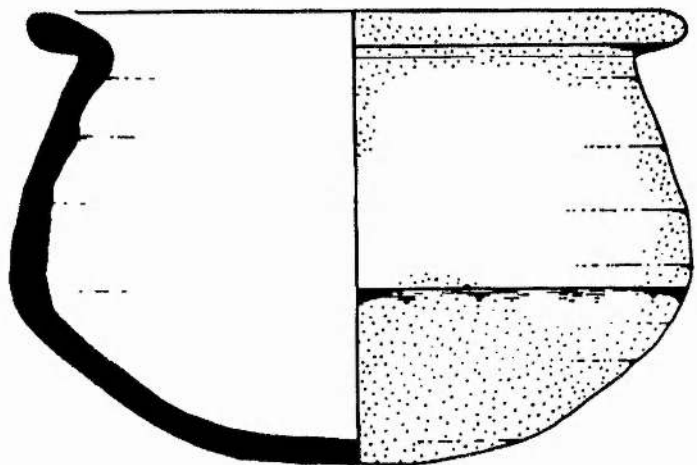


Fig. 6.15. 1622. Atocha.
Merida-Type Ware. Scale 1/2.

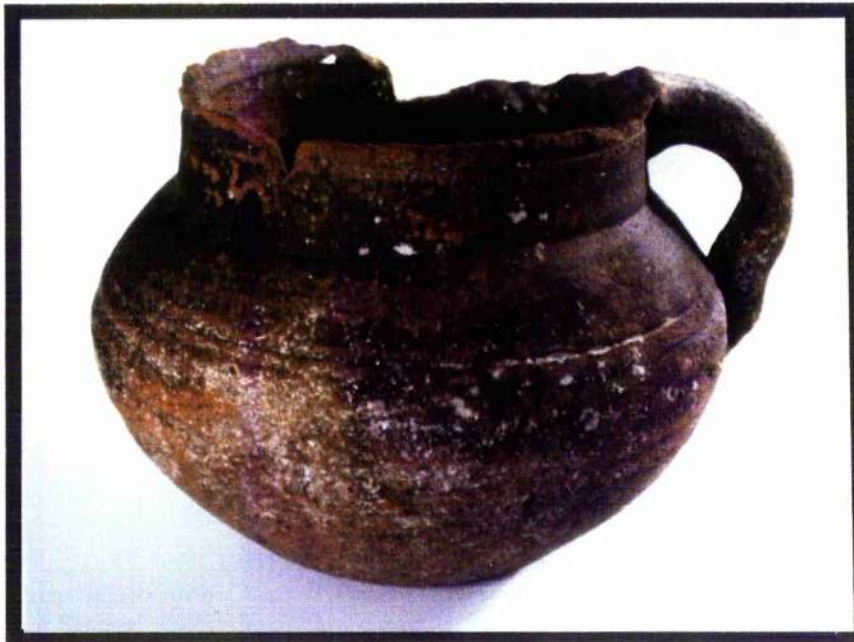


Plate 6. 5. - 6.9. Merida-Type Ware.

Plate 6.5. 1588. Spanish Armada. (top)

Plate 6.6. - 6.9 from 1622.

Plate 6.6 :

(middle left)

Plate 6.7:

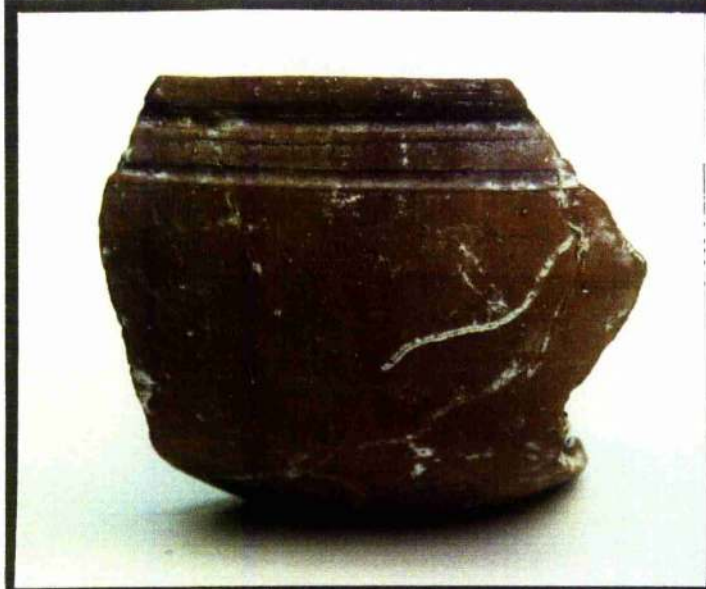
(middle right)

Plate 6.8:

(bottom left)

Plate 6.9:

(bottom right)



The surface of the vessel is stained or charred with blackening which may be the result of cooking or post-wreck deposition.

The examples from the three Armada (1588) wrecks represent the greatest variety of types encountered by this researcher. Fewer finds were recorded on the 1622 wreck of the *Atocha*. The Armada example included here and recovered after Martin's (1979) publication is of a slightly cruder manufacture and browner paste than the majority of his recorded forms (see Martin, 1979: 288 - 291) which illustrate the variety of forms and paste types one might find. The examples from the 1622 wreck are generally thicker than earlier examples and appear less smoothed on the exterior walls. The paste is also less compact than other Armada examples. *Merida-Type Ware* was not encountered on any later wrecks studied. The greater frequency of the type on the Armada wrecks probably reflects the fact that the fleet mustered at Lisbon and received much of its provisioning at that port.

LEAD GLAZED COARSE EARTHENWARE

16TH CENTURY EXAMPLES

Also present in the shipwreck collections are a variety of lead glazed coarse earthenwares. Deagan has pointed out that "variability within the category is expected to be considerable and the definition of discrete "types" difficult" (1987: 53). Paste variations within the *Merida-Type Wares*, for example, constitute enough variation to include a number of sub-types. Further finds from shipwrecks may help in pinning down more specific dates for the types and reveal a more specific typological framework.

Lead glazed earthenwares were reported from the 1554 Padré Island wrecks in utilitarian and tableware forms and were classified as *El Morro Ware* by Skowronek (1987: 106). Martin identified *Glazed Red Earthenware* as a specific type found on the Spanish Armada wrecks of 1588 which fabric analysis suggested originated from the same region as the contemporaneous *Merida-Type Wares* recovered (1979: 293 - 294). The paste is orange-red with numerous micaceous inclusions (ibid.). The most common forms are jugs and plates whose forms were entirely absent in an unglazed form (ibid.). Glazes recorded are bright green, yellowish, and clear, all quickly applied and thick, with the yellowish glazes most common on the interior of vessels that would have been stacked, suggesting an effect of the firing process rather than a different glaze (ibid.). Triple firing marks are common on the open forms (ibid.).

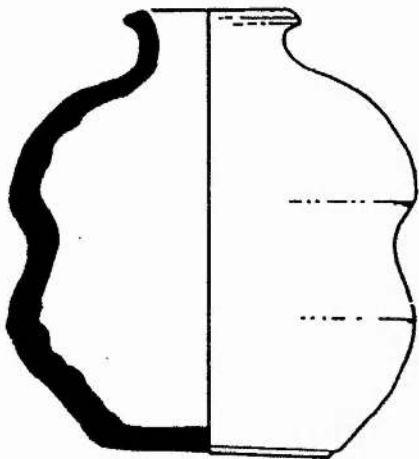
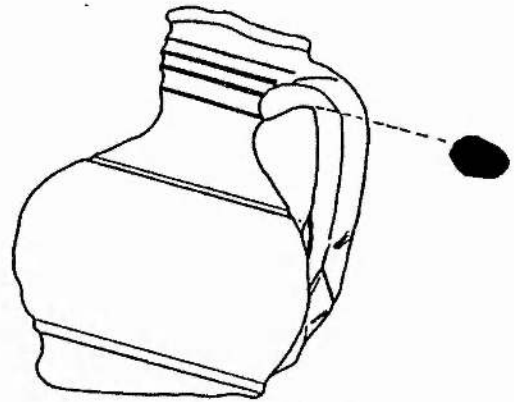


Fig. 6.16. 1588. Spanish Armada.
Lead glazed earthenware. Scale 1/2.

Recovered after Martin's (1979) publication Fig. 6.16. (after Martin) has been identified as a ceramic firepot called an *alcancia*, recovered from the *Trinidad Valencera*, which was used like a modern hand grenade when fighting in close quarters on land or at sea (Martin and Parker, 1988: 175). The neck and shoulder portion of a similar example was also recovered from the same wreck and is illustrated in Martin's publication (1979: 293, No. 82.). The paste is orange-red with numerous micaceous inclusions. The

glaze is clear on the exterior and interior of the vessel. *Alcancias* have been recorded from other shipwreck finds of which two were recovered from the *San Antonio de Tanna* (1697) wreck in Mombassa but were unidentified as such (Martin, unpublished report on file; citing Piercy, 1977: 346, Fig. 18A; Sassoon, 1977).

Fig. 6.17. Plate 6.10. From the 1595 wreck of the *San Pedro* this small pitcher has a beaked mouth, and slender neck running to a globular body. A handle runs from just below the rim to the middle of the body. The base is flattened and slopes toward the handle (away from the pouring spout).



*Fig. 6.17. Late 16th century.
Green glazed pitcher. Scale 1/2.*

The find has been pictured in Peterson's *History Under the Sea* (1973: 183, Plate 51. No. 2). The vessel is covered in an emerald green glaze on the interior and exterior. The paste is a brownish-red with some visible tempering. Similar *Glazed Red Earthenware* jugs and sherds were recovered from the Spanish Armada and recorded by Martin (1979: 292, Nos. 68 - 72).

17TH CENTURY TYPES

In the early 17th century, the 1622 wreck of the *Atocha* revealed additional examples of *Glazed Red Earthenware* which are similar to the Armada examples.

Fig. 6.18. Plate 6.12. is comprised of two rim sherds similar to Martin's Nos. 84 and

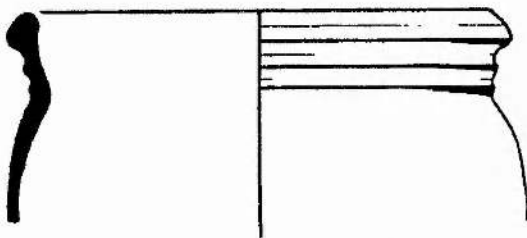


Fig. 6.18. 1622. Atocha. Green glazed earthenware. Scale 1/2.

85 (1979: 293). The glaze on the sherds is thick and dark to emerald green in colour covering both sides. The paste is red-orange-brown with numerous micaceous inclusions. The Armada examples, however, have an interior yellowish-green glaze as discussed above.

A second similar find from the (1622) *Atocha* which relates to the 1588 finds (see Martin, 1979: 292, No. 70 & 71) **Fig. 6.19. Plate 6.11**, is a complete basal sherd

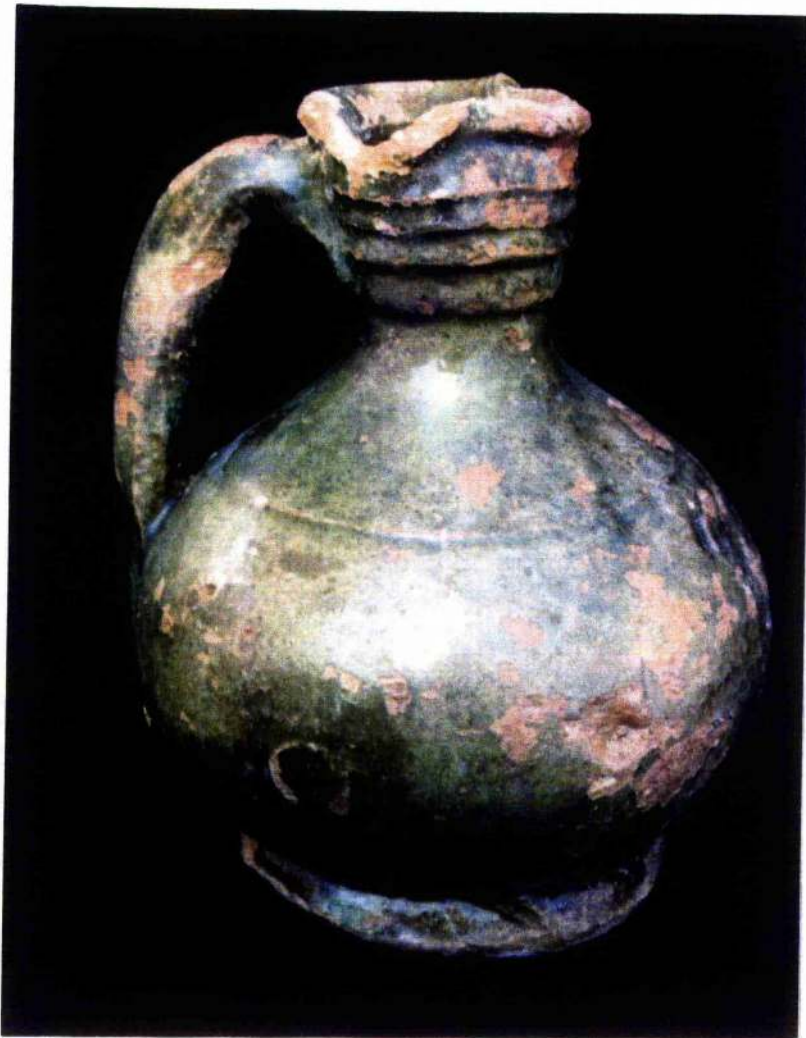


Plate 6.10, 1595. Glazed Red Earthenware pitcher.



*Plate 6.11, 1622. Atocha.
Glazed Red Earthenware base.*

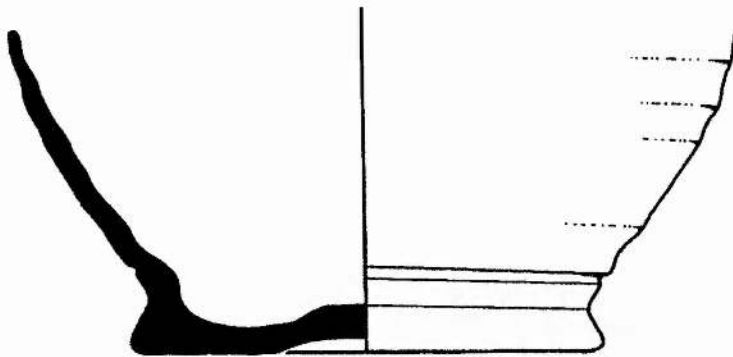


Fig. 6.19. 1622. *Atocha*.
Green glazed earthenware. Scale 1/2.

with a slightly countersunk base. The walls are relatively thin. The exterior and interior are covered with a mostly green to yellow-brown and in some places clear glaze which is crazed. The inside is lighter and more yellow in colour

than the outside and supports Martin's contention that the yellow interiors were a result of the firing process. Very slight finger throwing marks can be perceived on the thin exterior walls which look tooled smooth, and are more visible on the interior. The glaze does not completely cover the thickened base although it runs beyond the point where the walls begin. The paste is light orange-red to tan with numerous micaceous inclusions. The limited examples recovered from the *Atocha* site which closely resemble the *Merida-Type* paste and called *Glazed Red Earthenware* by Martin may again suggest that the type was Portuguese.

A variety of lead glazed utilitarian ware identified in the American colonies as *El Morro Ware* by Smith (1962: 68 - 69) named after El Morro, Puerto Rico where it was first encountered and later redefined by Deagan (1987: 50, from Deagan, 1976: 92 - 95) may also be represented on the 1622 wreck. It is characterised by paste colours from tan to reddish-buff with thin irregular transparent lead glaze that ranges in colour from most commonly orange or olive green, brown, light green, rust and mixtures of the colours (Deagan, 1987: 51). The grit from tempering is often perceived through the glaze which is reported to be usually confined to the interiors of vessels, with forms including small globular bowls, *bacins*, *platos*, *tazas*, pitchers, and *escudillas* (ibid.).

Plate 6.13. is a complete basal sherd with a thin green interior glaze and a tannish-red fairly compact paste with mineral tempering. The vessel walls are fairly thick with the exterior smooth and visible throwing marks on the interior.

Also from 1622 are two intact finds from the *Atocha* of jars or *orzas*. They have inverted pear shapes, with added ring foot bases. The slightly everted rims which appear made for cork closures lead to rounded shoulders which taper to the base. The only decoration is an incised line running around the upper shoulders. Both jars have a thick blackened glaze only on the interiors which may have been a dark green in colour. **Fig. 6.20. Plate 6.14.** Nicknamed "the Pilot's jar" this vessel was found

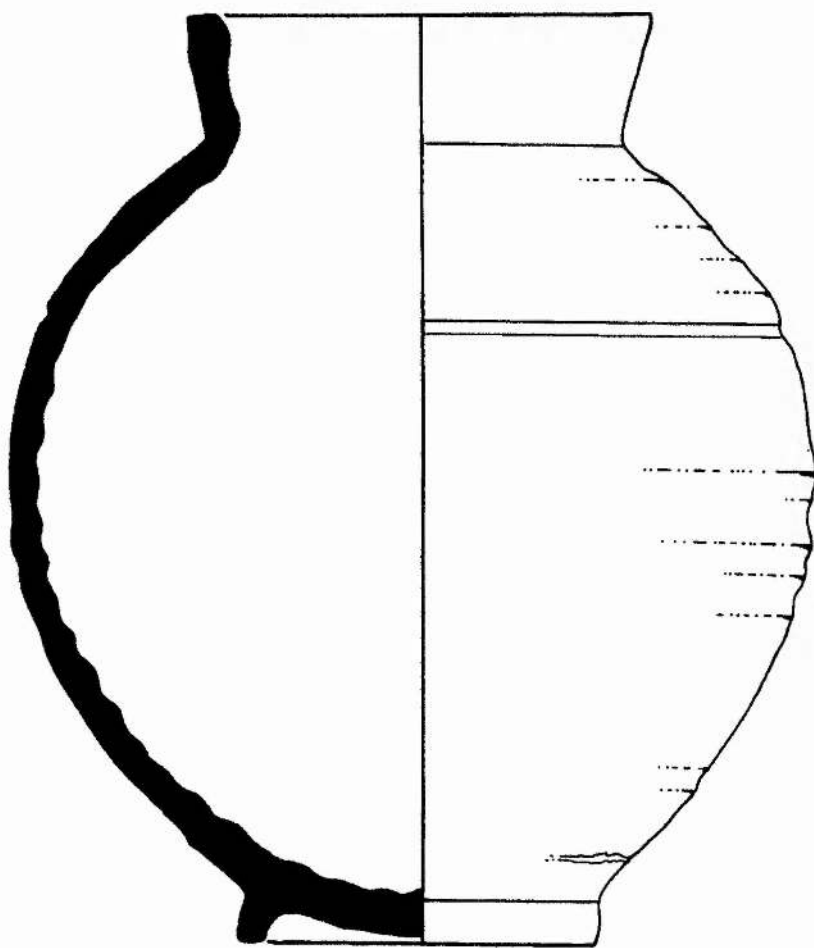


Fig. 6.20. 1622. *Atocha*. "the Pilot's jar". Scale 1/2.

inside the remnants of a wooden chest thought to be part of the personal belongings of the pilot of the *Atocha*. Divers who recovered the vessel reported the contents were "foul smelling". Unfortunately no samples were taken. The chest also contained a mariner's astrolabe, an ivory sundial, plotting dividers, a wooden bar thought to be part of a cross staff, eleven bags of assorted silver coins, eight gold escudos, and 41 feet of

gold chain encrusted in gold dust. Jars such as these may have been used to store spices or drugs. The paste is light tan to reddish-pink. The exterior surface is pitted with visible mineral inclusions in the paste. The exterior walls are well smoothed although throwing marks can be perceived. The interior profile was estimated using a pen light.

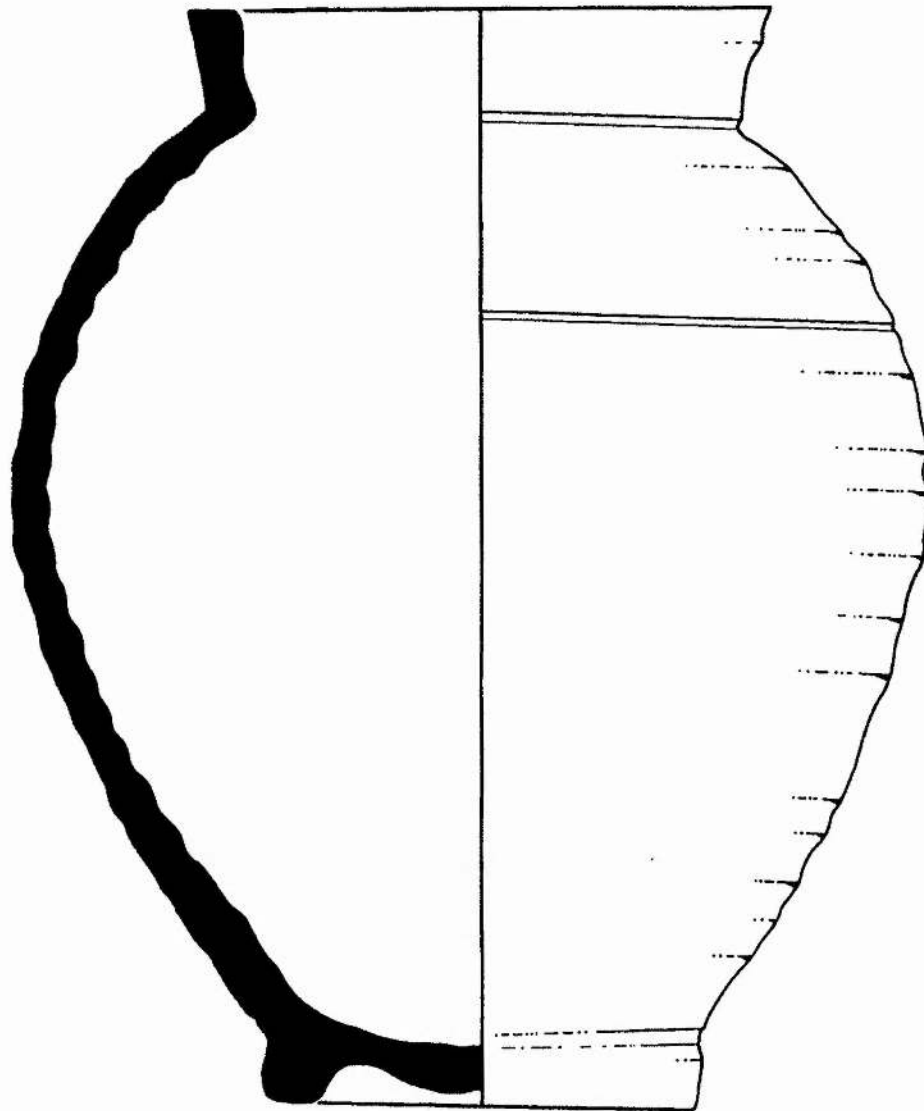
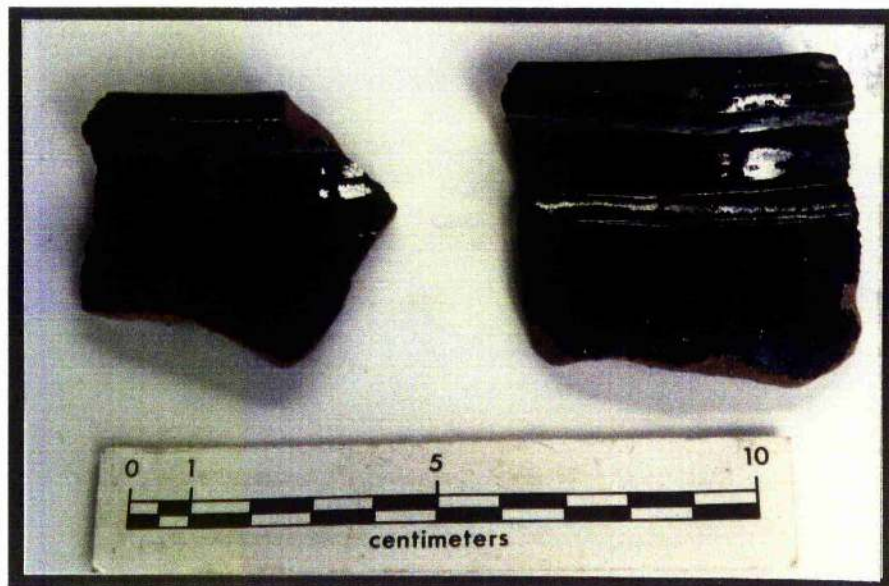


Fig. 6.21. 1622. Atocha. Lead glazed earthenware jar. Scale 1/2.

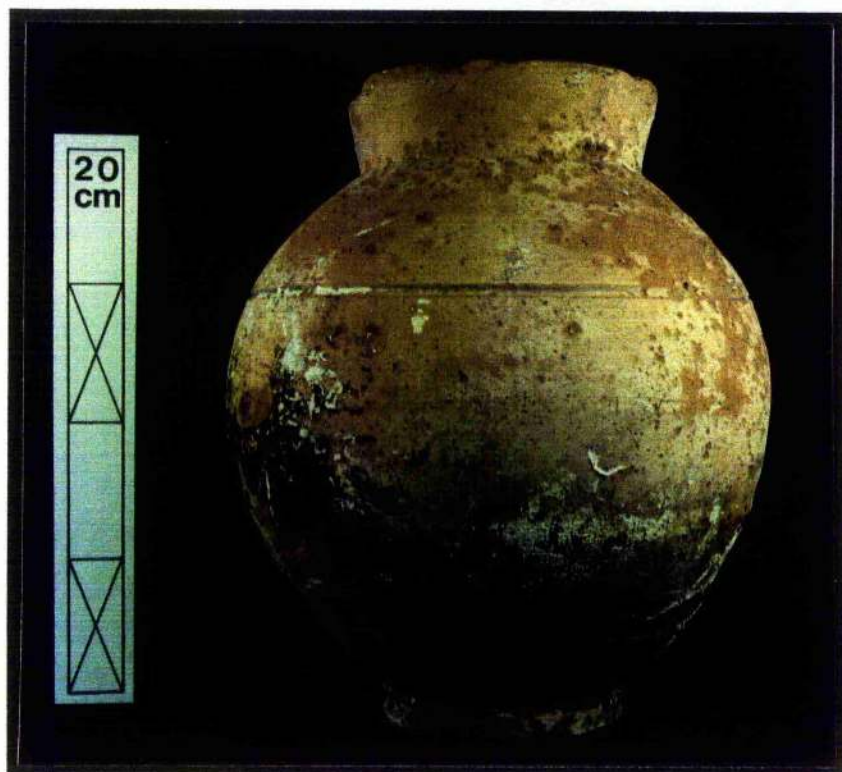
Fig. 6.21. *Atocha.* 1622. The second jar is similar to the above although larger. Found in a similar part of the wreck site it did not have any direct artifact associations



*Plate 6.12. 1622. Atocha.
Green Glazed Redware.*



*Plate 6.13. 1622. Atocha.
El Morro Ware base.*



*Plate 6.14. 1622. Atocha.
"Pilot's Jar".*

as reported by the divers. The exterior walls are smoother and the paste is less pitted than the previous example with fewer mineral inclusions. Throwing marks can be seen on the exterior walls which look as though they were finished with a tool, rough cloth, or sponge. The base is slightly thicker. The turned ring-foot bases were not encountered in the Armada (1588).

In addition to the green glazed types described from the early 17th century, examples of brown and honey coloured glazed wares were also encountered. Recovered from the site of the *Atocha* Fig. 6.22. are three sherds comprising the base of a small vessel covered on the interior with a dark brown glaze. The exterior does

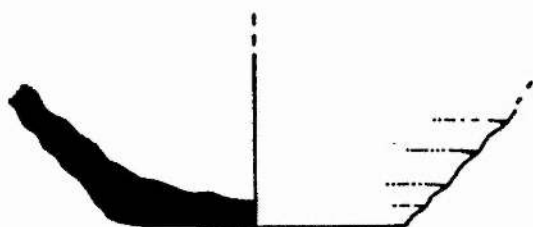


Fig. 6.22. 1622. *Atocha*. Brown glazed earthenware. Scale 1/2.

not appear glazed which is a reported characteristic of *El Morro Ware* (Deagan, 1987: 51), but is stained dark in some places. The paste is reddish-brown. The mineral tempering can be seen through the glaze. The vessel sits on a flattened base with the walls flaring outwards. Throwing

marks are visible on the interior and exterior walls.

A second brown glazed sherd from the *Atocha* Fig. 6.23. has a tannish paste with visible tempering. The exterior is well smoothed with what looks like a decorative design comprised of three fingers of a brown glazed or painted design. The interior wall has visible throwing marks and is covered in a thick dark brown glaze.



Fig. 6.23. 1622. Brown glazed sherd. Scale 1/2.

The final variety of lead glazed wares recovered from the 1622 wreck consists of two sherds with a red to brown paste and a thick glossy dark brown glaze on the interior and exterior walls. Throwing marks are visible on both surfaces.

Later in the century, the wreck of the *Concepción* (1641) revealed a two handled globular bowl with a straight sided rim **Plate 6.15**. It is on display at the Museo de las Casas Reales, Santo Domingo, Dominican Republic, and illustration was not possible. The example appears to be a glazed two handled version of similar unglazed *Merida-Type Ware* vessels described above from the late 16th century Armada wrecks **Fig. 6.10.** and another **Fig. 6.13.** from the 1622 wreck of the *Atocha*. This example, however is glazed on the exterior a brown to honey-yellow with a hint of green, and crazed. The paste is tan to tannish-red-pink with visible mineral tempering. The glaze lacks the same colour, and homogeneity of colour, that would confuse the ware with *Melado* or honey coloured wares which date much earlier, in addition to the difference in paste.

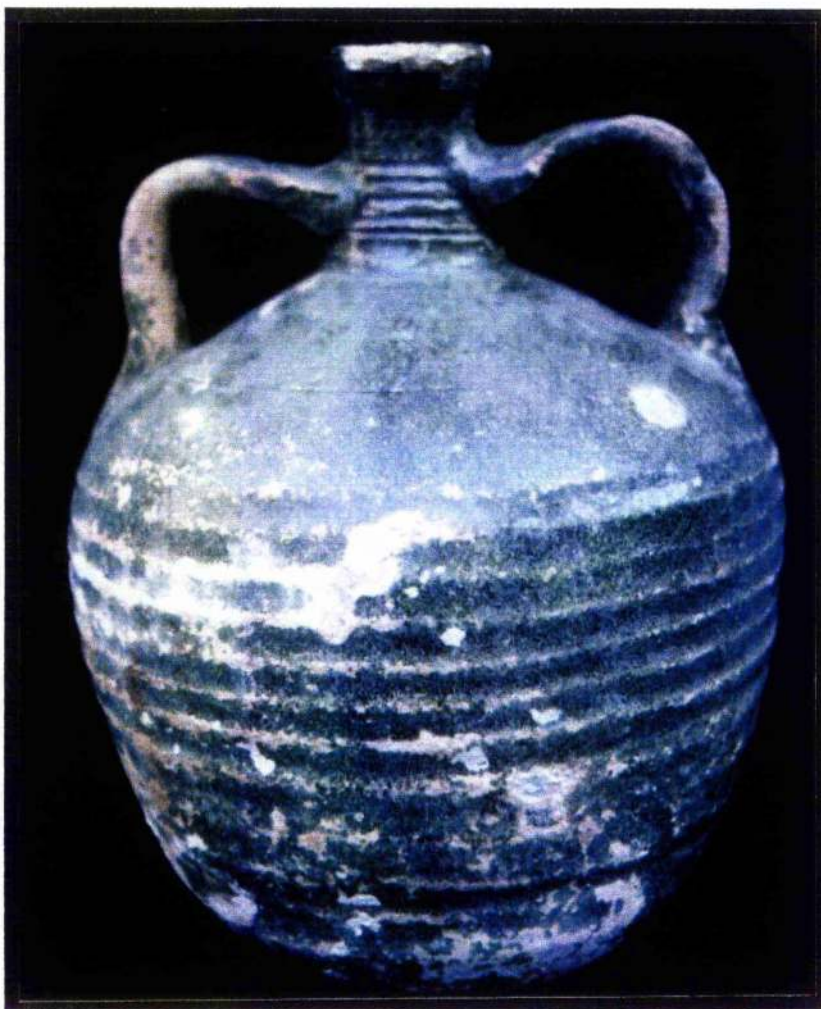
18TH CENTURY EXAMPLES

The finds from the wrecks of the *Tolosá* and *Guadalupe* wrecked in 1724 included a variety of lead glazed wares. Because of the enormity of the ceramic collection, as previously discussed, further study is required. Six examples of lead glazed wares are included here which were on display at the Museo de las Casas Reales, Santo Domingo, Dominican Republic.

Fig. 6.24. Plate 6.16. Tolosá. 1724. Two handled green glazed jug similar in the lower body to an *olive jar-type botija*. One of two, this example is heavily glazed on the interior and exterior in a dark to emerald green glaze. There are two handles on either side of a narrow neck attached to the upper shoulders. The lip is slightly



*Plate 6.15. 1641.
Concepción. A two
handled lead glazed pot.*



*Plate 6.16. 1724. Tolosá or
Guadalupe. Green glazed.*

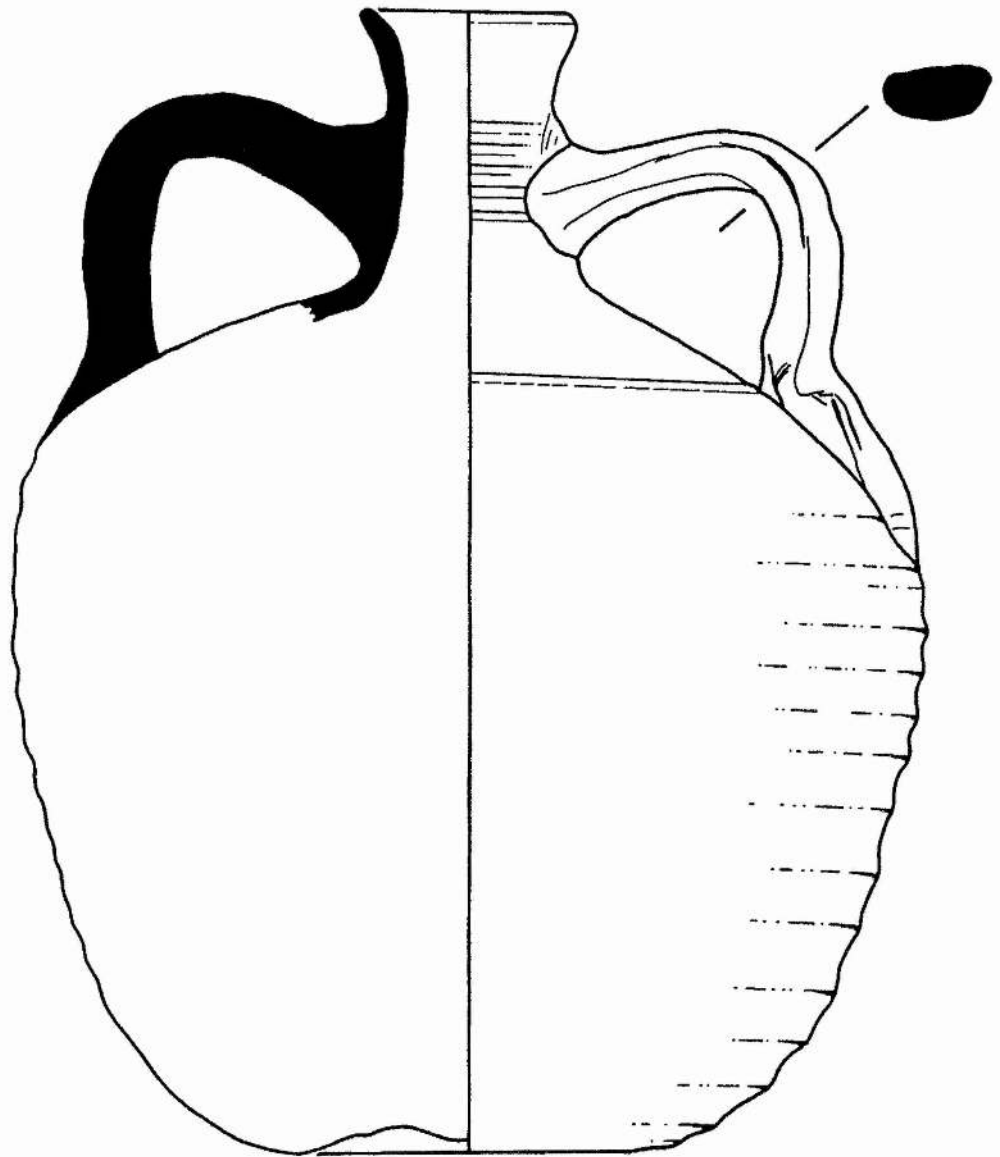


Fig. 6.24. 1724. Tolosá. Green glazed jar with two handles. Scale 1/2.

everted. Throwing marks are exaggerated on the lower body and the shoulders are well smoothed. The base is concave with a small nipple on the bottom which permits it to stand on its own base. There are six incised lines around the neck with an additional incised line running around the shoulder where the handles begin. The paste is light tan-brown with some mineral tempering. The paste is dissimilar to that of *olive jar-type botijas*.

The jar (not illustrated) is almost identical to the above, although it is more worn and surf abraded. Its height measures 29.4 cm and maximum diameter is 23.3 cm. The second example has similar incised lines around the thin neck, although fairly worn. The same incised line runs around the shoulder. The glaze is a very thinly worn light green on the exterior and interior. The paste is similar to the above although it looks a bit lighter with a little more fine mineral tempering.

Fig. 6.25. *Tolosá*. 1724. Also from the *Tolosá*, this spouted pitcher sits on a flat solid base with an inverted pear shaped body, smoothed shoulders coming to a small neck and spouted mouth. Turning marks are pronounced on the exterior mid-body and appear to be formed by a tool. The shoulder and body just above the base has been intentionally smoothed. There are spots of light green glaze covering the exterior, although they are very difficult to discern due to heavy concretion, with the top of the handle showing the best indication of a light green glaze. The interior does not have any definite glaze remnants although there are a few splotches of discolouration which may indicate a glaze of the similar exterior colour. The paste is a light tan to a reddish-brown on the exterior. The shoulders are lighter in colour and I expect that the post-wreck deposition has coloured the paste on the lower portion of the vessel giving it the redder colour. The interior paste is a more true tan, with few imperfections and tempered with sandy particles which are also visible on the exterior shoulder.

Two other small green glazed pitchers are on display at the Museo de las Casas Reales from the *Tolosá* and *Guadalupe* wrecks. Both could not be illustrated as they were behind display cases. The first, **Plate 6.17**, is of similar form to the above example. There is a green-yellow glaze covering the top of the vessel's exterior

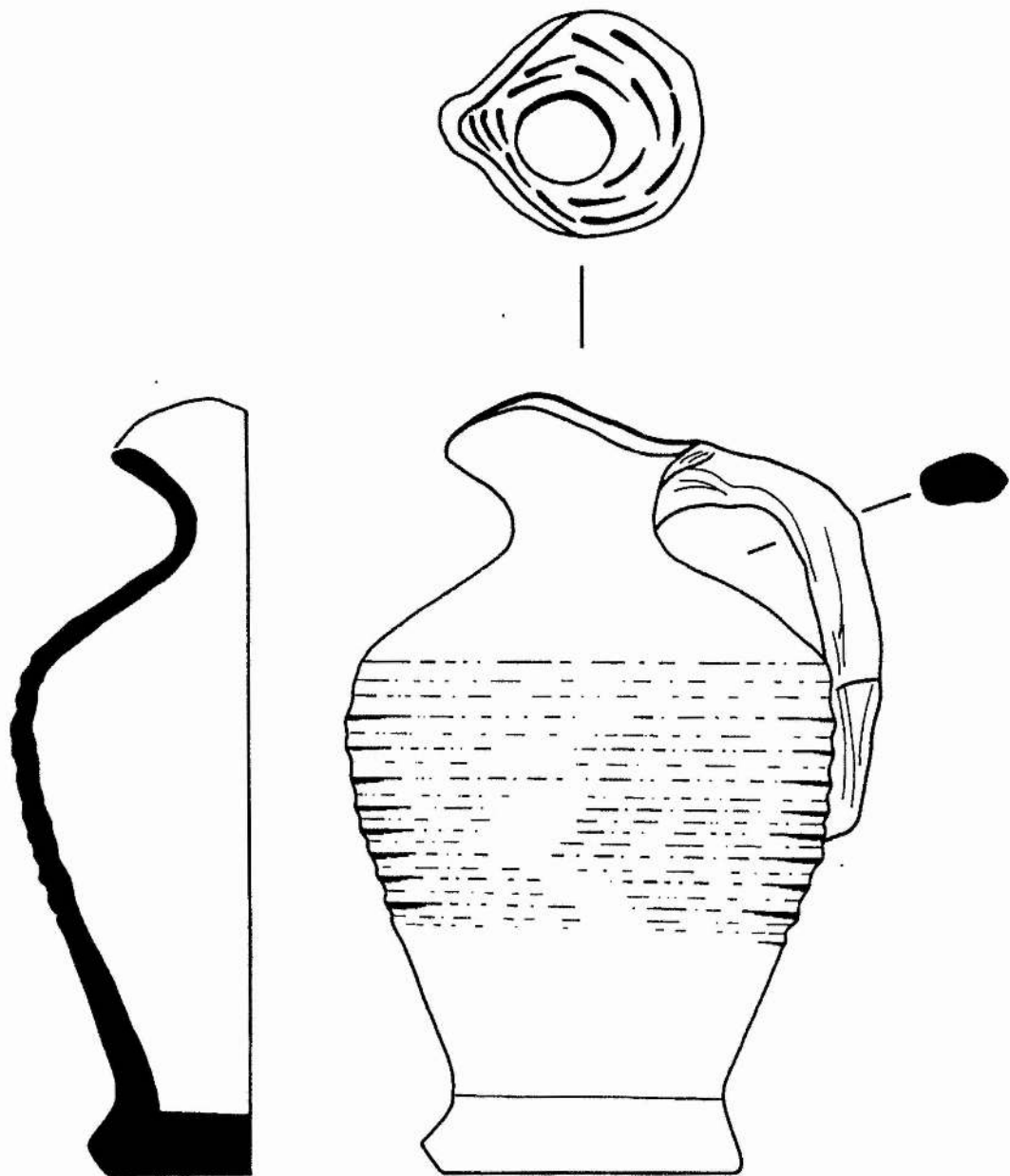
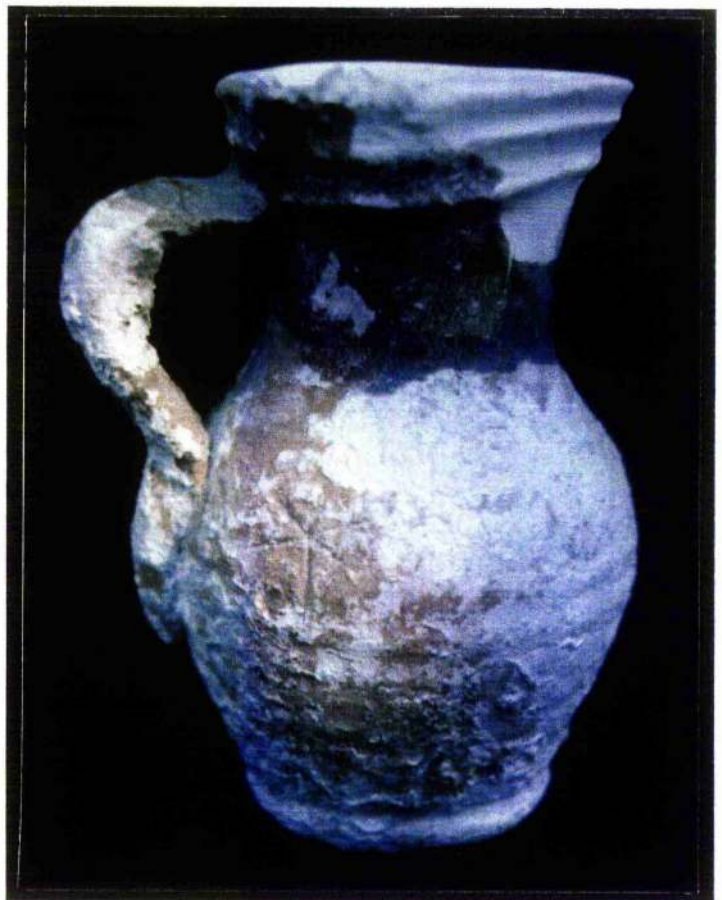


Fig. 6.25. 1724, Tolosá. Green glazed pitcher. Scale 1/2.

spout, handle and upper shoulder. It appears to continue into the interior. The paste is brownish-tan with visible tempering. This example is more globular, without the pronounced throwing marks on the mid-section. The base appears to be a solid flat surface.



*Plate 6.17. 1724.
Tolosá or Guadalupe.
Green glazed pitcher.*



*Plate 6.18. 1724.
Tolosá or Guadalupe.
Green glazed pitcher.*

The second vase is a small spouted pitcher with a spout reconstructed from plaster. There are the remains of a thick dark green glaze on the exterior rim and on the upper portion of the handle. A bare spot in the mid-section near the handle shows the scratchings of three lines forming a "*". Throwing marks are visible on the exterior walls while the shoulders are smoothed. The rim is decorated by two grooves below the lip. The paste is tan with visible tempering. **Plate 6.18.**

Also part of the *Tolosá* and *Guadalupe* (1724) display is a small globular pot

(**Plate 6.19**) with a

slightly everting rim

and two small handles

attached just below

the rim on either side

and connected to the

rounded shoulders.

They appear too small

for lifting the pot and

may be intended for a

twine or leather strap.

The glaze is worn

from the exterior with

the interior glaze a

brownish-grey in colour.

The only green-yellow glazed

example **Fig. 6.26. Tolosá. 1724.**

is a shape similar to the *orzas* recov-

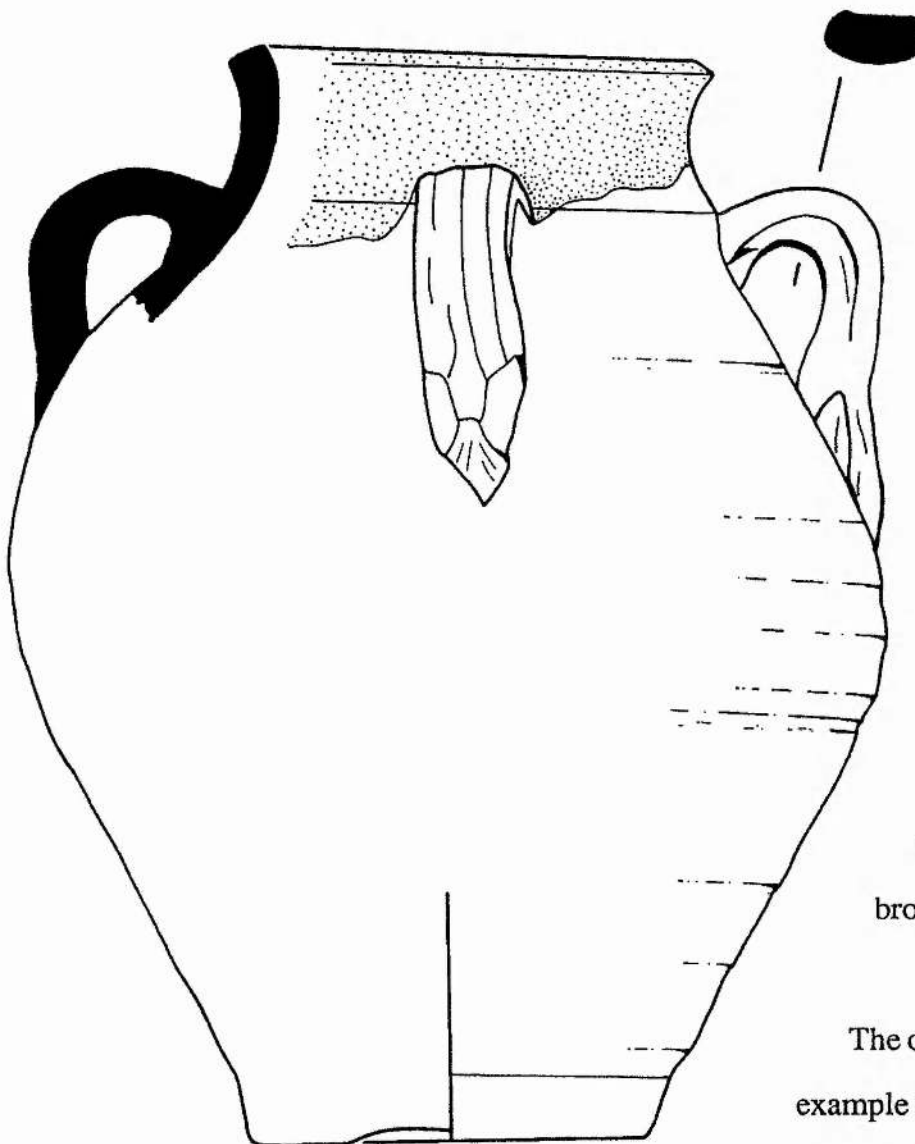
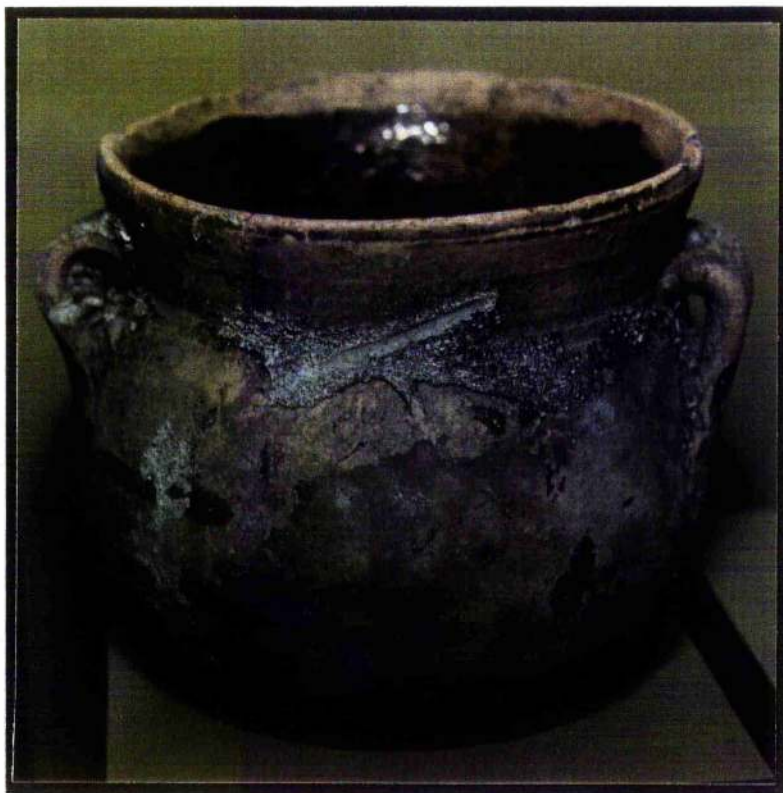
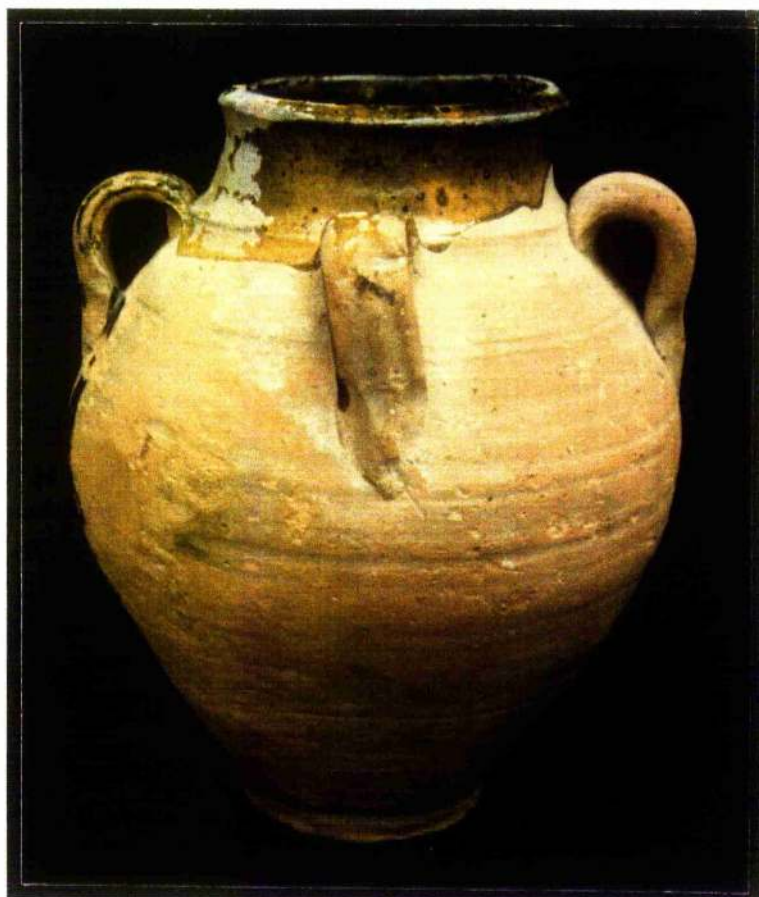


Fig. 6.26. 1724. Tolosá. Glazed four handled pot. Scale 1/2.



*Plate 6.19. 1724.
Tolosá or Guadalupe.
Two handled pot.*



*Plate 6.20. 1724.
Tolosá or Guadalupe.
Lead glazed jar.*

ered on the 1622 *Atocha* wreck, with the addition of four small handles beginning just below the heightened rim and connected to the shoulder of the vessel. The flat base is only slightly concave. The interior is covered in a yellowish-green glaze that spills over the rim and onto the handles. The exterior is smoothed with throwing marks evident. The interior has visible throwing marks. The paste is pinkish-tan with heavy tempering and visible inclusions.

FELDSPAR INLAID WARE

17TH CENTURY EXAMPLES

Limited to the wrecks of the early 17th century is a ware identified by Fairbanks ^{et al.} (1966) as *Feldspar Inlaid Ware*. The ware is characterised by the inlay of white feldspar or other mineral chips set into the walls of the vessels. The paste is a *Merida-Type* or *orange micaceous* fabric ranging in colour from a reddish-orange to orange-brown. Some examples have a painted on or dipped reddish-brown slip. Designs are moulded and incised into decorative patterns. The forms encountered in this study include globular bowls and narrow necked containers.

It has previously been reported to have a temporal range of between circa 1530 and 1600 on colonial terrestrial sites (Deagan, 1987: 43), although production is reported to have continued in Mexico into the 20th century (ibid. 42). First reported as part of the finds from the *San Antonio* wrecked in 1621 (Peterson, 1973: 185; Plate 52 No. 9), examples have also been recovered from the *Atocha* (1622). It has not been reported from shipwrecks in any contexts beyond that of the early 17th century.

The Listers have identified the ware in Guadix, Andalusia where it is suggested the type was produced, originating from Muslim traditions elsewhere (Lister and Lister, 1987: 92). The pottery was dispersed into the environs of Seville and then overseas to the Indies (*ibid.*). They also note that a similar kind of pottery is made there today (*ibid.*).

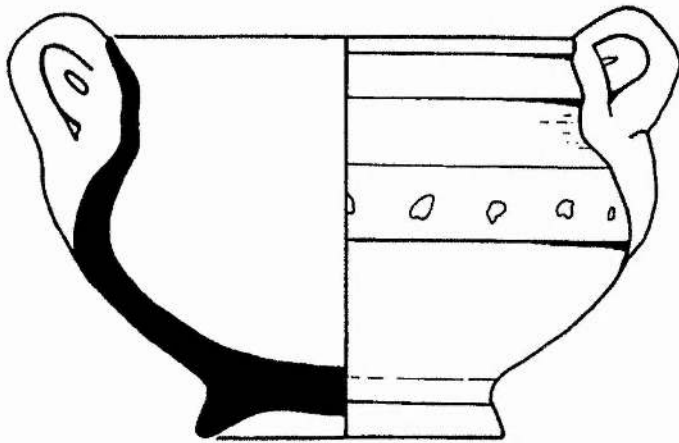


Fig. 6.27. 1621. San Antonio. Feldspar inlaid pot. Scale 1/2.

Fig. 6.27. *San Antonio*. 1621. A feldspar inlaid bowl with moulded "ear like" handles. It stands on a ring-foot base and has a row of white mineral chips pressed into the mid-section. The rim lip is slightly everted with a groove followed by a ridge before the shoulders. The paste is reddish-brown with visible tempering and mineral inclusions. There appears to be a brownish slip covering the paste.

Plate 6.21. *San Antonio*. 1621. This vessel has moulded oval bosses pushed in from the outside in a band forming the neck. Between the bosses, chips of white minerals are pressed into the clay. The body is ovoid standing on a small flattened base. The paste is orange-brown with fine mineral tempering and looks to be covered in a similar coloured slip. The fabric has fewer gritty particles than the other 1621 example.

The 1622 wreck of the *Atocha* also yielded examples of *Feldspar Inlaid Ware*. A large body sherd was recovered with three small handle sherds found in close proximity and thought to be part of the vessel. (**Plate. 6.23**). The fabric is a fine,

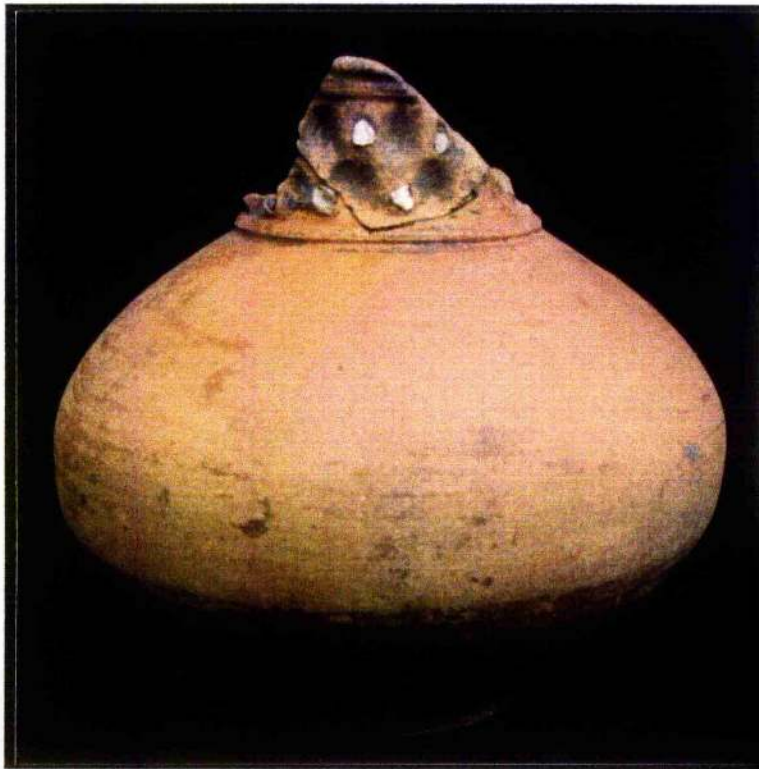


Plate 6.21. 1621.
San Antonio. Feldspar
Inlaid Redware.



Plate 6.22. 1622.
Atocha. Feldspar
Inlaid
Redware.



Plate 6.23. 1622.
Atocha. Feldspar
Inlaid Redware.

slightly gritty brown with some inclusions and visible tempering. The exterior and interior are covered in a thick red painted on slip that does not adhere well after desalinization and drying. There is a row of white mineral chips at the mid-section pressed into the exterior with incised leaf designs between the chips. The middle row is bordered by a series of three grooves towards the base and four towards the top. The base of a handle rests on the upper shoulder. The shoulder design includes white mineral chips on raised vertical ridges with incised decorations which look to have been filled with white colouration. A partial leaf can be seen in the vertical groove separating the ridges on the shoulder.

The second 1622 example is a complete base with fresh breaks revealing a similar paste although **Plate 6.22.** shows it as more grey which is the weathered edge of the worn paste. The central interior design consists of an incised floral and leaf central medallion with four white mineral chips set in the centre, bordered by a double circular incised line with white mineral insets.

BIZCOCHO WARE (BISQUE WARE)

Recovered from the *Atocha* (1622) wreck and from the *Tolosá* (1724) are delicate unglazed wares with creamy white chalky paste and thin walls which have been called *Bizcocho Ware* by Deagan (1987: 43) which may also be similar to examples found in Seville described by the Listers (1987: 147). The forms reported from terrestrial sites include pitchers, moulded *platos*, and vases with restricted necks and fluted, everted rims (Deagan, 1979: 43). The ware has been associated on terrestrial sites with pre-1550 contexts (ibid.) which predate the finds from the two wrecks.

The forms encountered on the 1622 wreck include a small saucer, the mid-section of a globular vessel decorated with a moulded warrior and incised designs, and a two

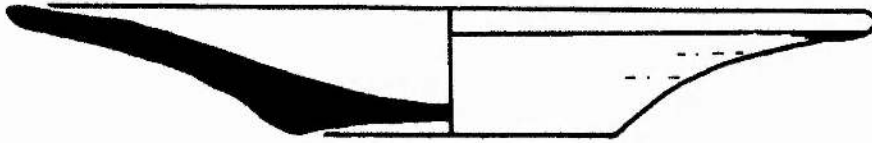


Fig. 6.28. 1622. Atocha. Bizcocho saucer. Scale 1/1.

handled pitcher. The fabrics consist of a smooth chalky off-white paste, sometimes compact, with little

visible tempering. **Fig. 6.28.** (Plate 6.25) is a small saucer, apparently formed on a slowly rotating wheel, measuring only 11.1 cm in diameter and standing 1.6 cm tall. The surfaces appear smoothed with a tool or a cloth.

Fig. 6.29. and Plate 6.24 . A two handled pitcher with a small neck and globular body. The handles attach below the rim and to the mid-section. Made from a similar paste as the above, although the core of the fabric is more pink in colour. The walls are slightly thicker. A concave base has a

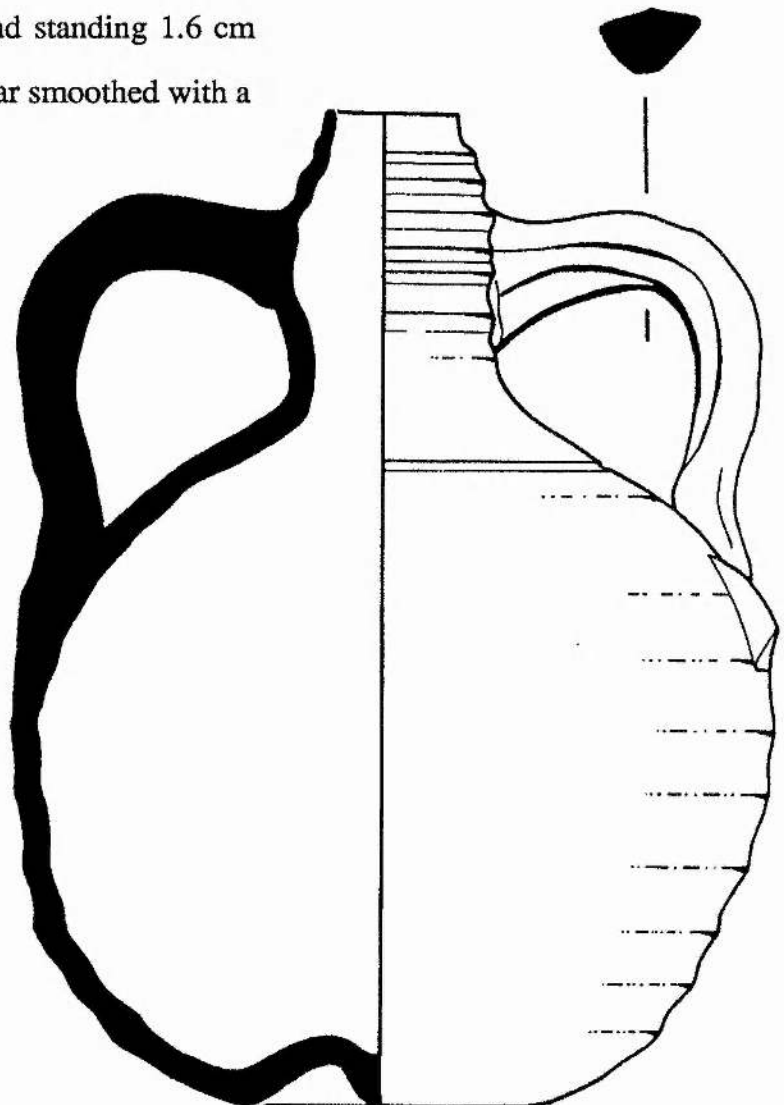


Fig. 6.29. 1622. Atocha. Bizcocho pitcher. Scale 1/2.

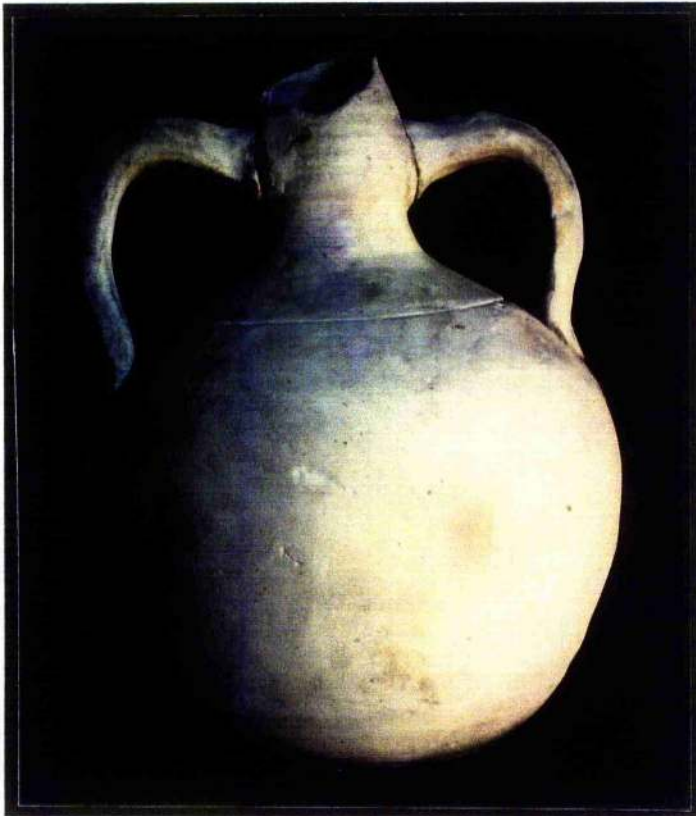


Plate 6.24. (top) 1622. Atocha. Bizcocho jar with two handles.

Plate 6.25. (middle) 1622. Atocha. Bizcocho saucer.

Plate 6.26. (bottom left) 1622. Atocha. Moulded bizcocho.

Plate 6.27. (bottom right) 1622. Atocha. Moulded bizcocho.



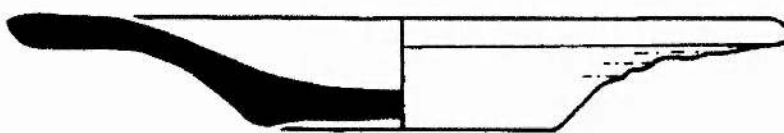
pronounced nipple at the centre of the exterior. Finger throwing marks can be perceived on the exterior although it is well smoothed with the impressions visible on the interior. An incised line encircles the jar around the top of the shoulder. It is 26.2 cm high and 19.5 cm maximum diameter.

Plate 6.26. This sherd is of a slightly harder paste and appears to be a portion of the neck of a small pitcher. The moulded impressions were applied by the potter's fingertips. It is 5.5 cm high.

Plate 6.27 is an applied moulding design depicting a warrior holding a battle axe. The figure appears to be seated, surrounded by double incised lines with floralesque bosses. Three other sherds were recovered which are part of the shoulder. A partial handle was also recovered.

18TH CENTURY EXAMPLES

Recovered from the wreck of the *Tolosá* (1724) over one hundred years later than the *Atocha*, are three small saucers almost identical to the 1622 example, with a similar creamy, chalky white paste. The three finds exhibit similar manufacturing characteristics. One saucer has a grey-brown core. Small throwing marks are visible on the underside. The interiors are well smoothed. **Fig. 6.30.** is complete with only



a little concretion on the underside.

Fig. 6.30. 1724. Tolosá. bizcocho saucer. Scale 1/1.

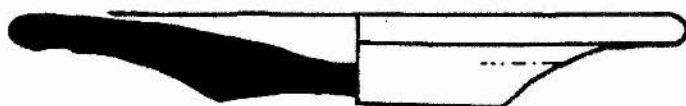


Fig. 6.31. 1724. Tolosá. bizcocho saucer. Scale 1/1.

Fig. 6.31. is similar to the above although not concreted and not complete.

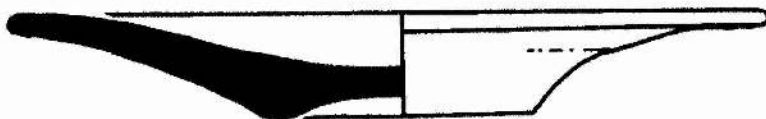


Fig. 6.32. 1724. Tolosá. bizcocho saucer. Scale 1/1.

Fig. 6.32. also similar to the above is concreted on both sides with half missing.

AMERICAN ABORIGINAL POTTERY

17TH CENTURY

Found on the wreck of the *Atocha* (1622) these dark brown wares are made from a thick coarse, granular paste filled with numerous large quartz-like inclusions. Other inclusions appear to be pyrites (fool's gold). There are no traces of glaze on any of the pieces although many appear blackened by fire. The interior and exterior walls are well smoothed, with evidence of tooling marks on the interior vessel surfaces. They do not appear to be wheel thrown. Their crude manufacture and paste characteristics, so dissimilar from any other Old World pottery types, suggest a New World origin. The author has identified similar pieces from earlier Spanish wrecks in Bermuda, although there are no known examples of this type in the Armada collection, or from later assemblages. Further study is necessary.

Forms include a large storage jar with a simple moulded mouth, nose, ears, and eyes on the neck, globular rounded-base bowls with large slightly everted mouths,

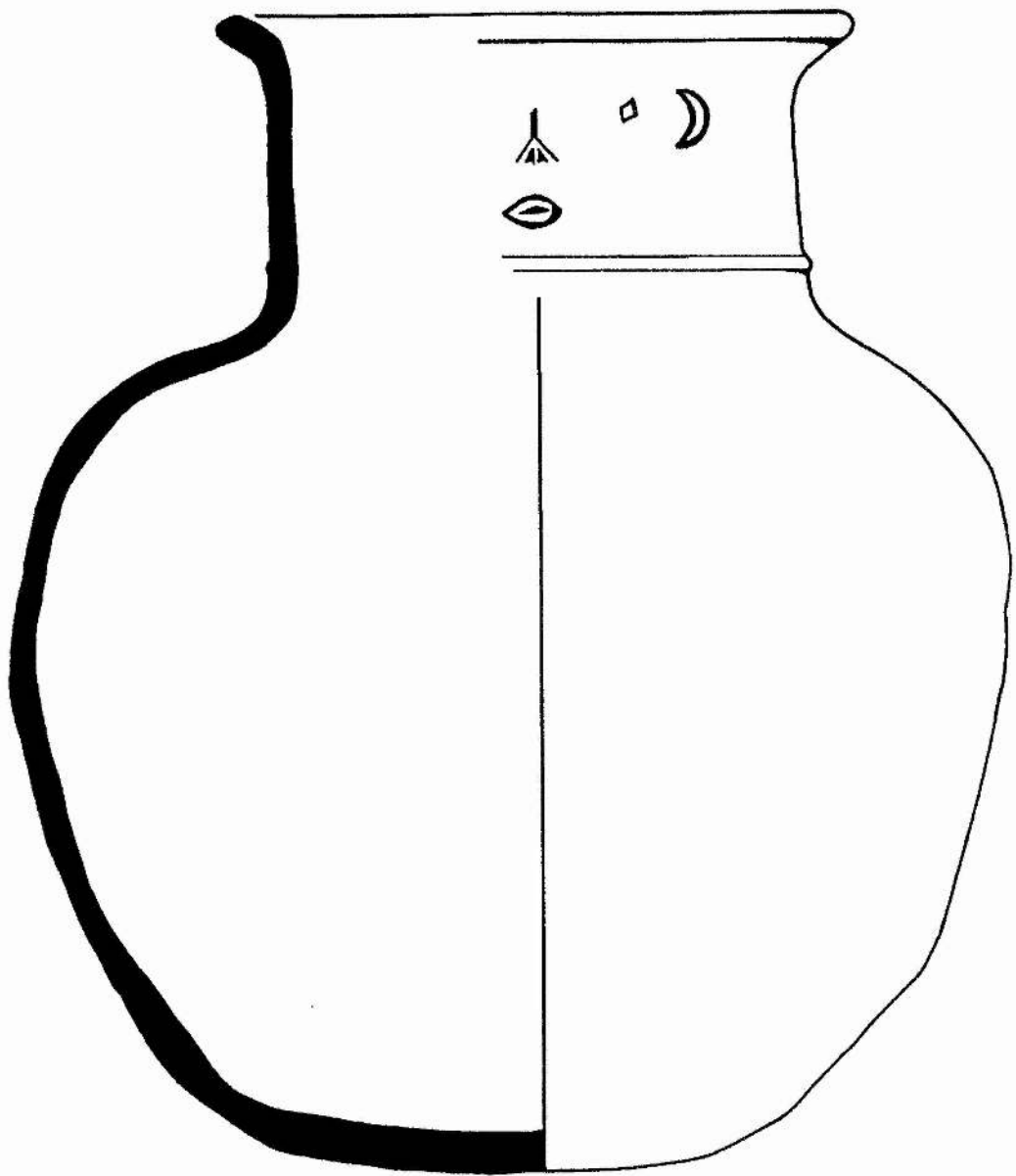


Fig. 6.33. 1622. Atocha. Indian storage pot. Scale 1/4.

and larger bowls with added everted rims. Several charred sherds and charring on the bottoms of the near intact pieces imply that the wares were employed in the galley for the preparation of food, and may even suggest that an Indian cook was part of the galley crew. The type appears to have a different paste than previously described aboriginal wares encountered from Florida sites, although forms and functions are similar to other recorded examples which served as colonial cooking and food preparation vessels (Deagan, 1982: 29, 31 - 33). The *Atocha* collection includes the

remains of up to seven different containers. Due to the crumbly nature of the paste, reconstruction is extremely difficult.

Fig. 6.33. Atocha. 1622. This jar was reconstructed from several small sherds. It has a globular form with a moulded ridge encircling the straight sided neck. The neck is straight sided with an everted rim which appears added. The moulded impression of a face is added to the neck with a simple pinched mouth, nose, diamond shaped eye and crescent moon ears. The paste colour is several shades of brown with a brown-grey gritty, heavily included paste. The exterior is well smoothed with linear forming marks visible on the interior. A total of 95 sherds are believed to belong to the vessel. **Plate 6.28.**

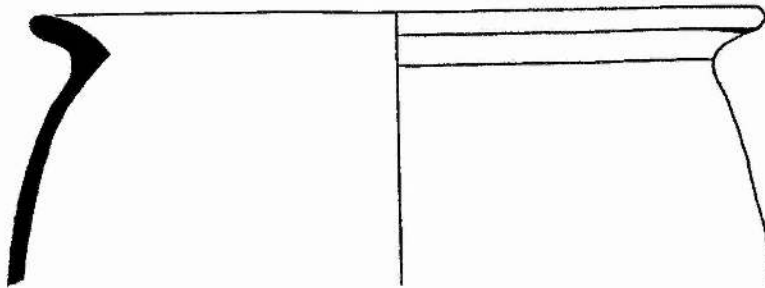


Fig. 6.34. 1622. Atocha. Rim of Indian pot. Scale 1/4.

Fig. 6.34. Atocha. 1622. The wall and rim section of a large pot with an added rim. The exterior surfaces are well smoothed and there may be residue of a thin brownish slip.

This vessel has large mineral inclusions including particles which may be pyrites. The walls are thinner than the previous example. **Plate 6.29.**

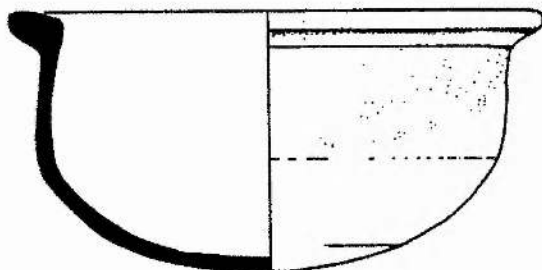


Fig. 6.35. 1622. Atocha. Indian pot. Scale 1/4.

Fig. 6.35. Atocha. 1622. The base wall and rim section comprising about one third of a rounded pot with a rounded bottom and a thick added everted rim. The top portion of the vessel on the exterior is covered in a black substance which

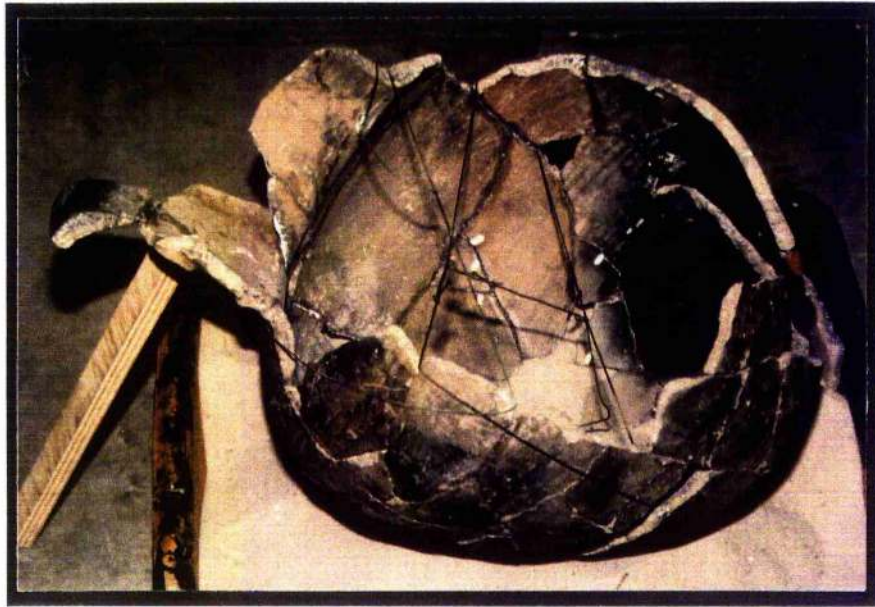


Plate 6.28. 1622. Atocha. Aboriginal jar under reconstruction.



Plate 6.29. 1622. Atocha. Indian jar fabric with gold-like inclusion.

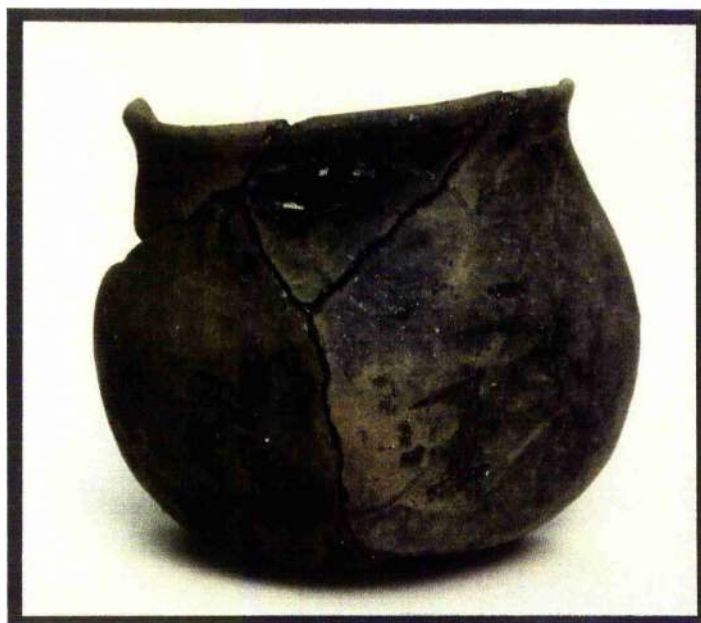


Plate 6.30. 1622. Atocha Indian Umberware cooking pot.

appears to be charring from fire (indicated by the stippling in the illustration). The paste is a dark brown in colour.

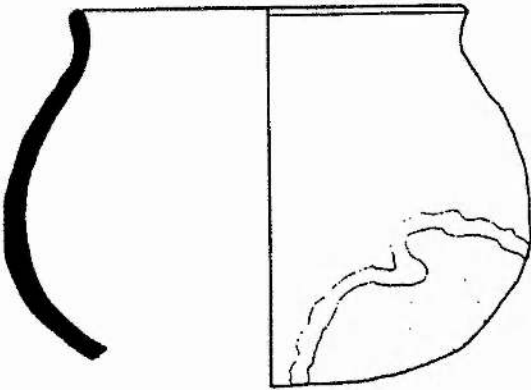


Fig. 6.36. 1622. Atocha. Indian pot. Scale 1/4.

A third form is represented by globular pots with rounded bases. The rims have been pulled slightly outward from the vessel walls and were not added. **Fig. 6.36.** *Atocha*. 1622. The largest of the pots, the underside is stained black with an orange border (indicated by the stippling). The paste colour is mixed brown with dark brown. The walls are well smoothed.

Fig. 6.37. *Atocha*. 1622. Similar to the above this pot has a "Z" and a small "√" worn or on the exterior which are most likely wear marks as opposed to carved symbols. **Plate 6.30.**

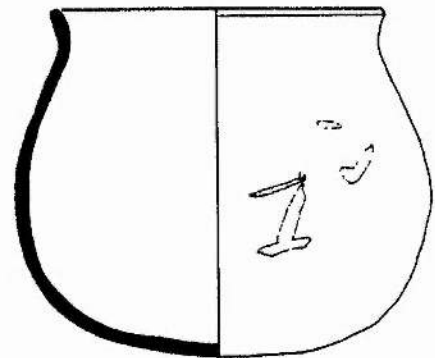


Fig. 6.37. 1622. Atocha. Indian pot. Scale 1/4.

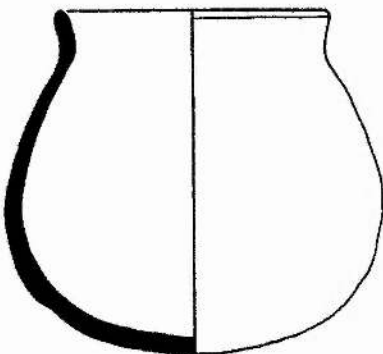


Fig. 6.38. 1622. Atocha. Indian pot. Scale 1/4.

Fig. 6.38. *Atocha*. 1622. Similar to the above, this example also has a small splotch of orange residue on its side near the rounded base. A crack in the rim which runs to the shoulder may have been a result of the firing of the vessel rather than a result of the wreck.

TIN GLAZED EARTHENWARES

MAJOLICA

Because of its commonplace occurrence on American colonial sites, and identifiable decorative patterns, colours, and treatments, *majolica* has received considerable attention from archaeologists. The pioneer study by John Goggin (1968) carried out over several years and utilising the resources of several New World sites, demonstrates the usefulness of developing classifications and establishing typological frameworks. Additional studies by North American archaeologists have refined Goggin's work and include studies by Robert and Florence Lister (1974, 1976, 1982, 1987), Deagan (1978, 1987), and Fairbanks (1972). Other significant contributions in Central America include Luján Muñoz (1975) and in north-west Europe, Hurst (1986).

Majolicas have also received attention in art historical works (see Deagan, 1987: 54) as their forms appear in several paintings by artists of the period. Decorative designs have a tendency to change over shorter time periods, and are a useful dating criterion. The evolution of designs has also been shown to reflect many of the diverse influences that Spanish and colonial cultures were exposed to, such as the Muslim occupation of the peninsula and trade with the Orient. The ware can also give insight into the changing tastes and needs of the consumer. Because the types are so subject to stylistic change, the finds from shipwrecks can further tighten temporal ranges. Wreck finds have also provided intact examples which are rare in terrestrial contexts.

Majolica is a decorated tin glazed pottery type with a usually soft cream to buff coloured paste with light mineral tempering and few inclusions. Forms encountered

on wrecks include plates, bowls, pitchers, drug jars or *albarelli*, salt cellars, ink wells, and small cups. New World types are often distinguished by a red paste or pinkish-tan granular paste (Deagan, 1987: 72). The New World types have been broken into two general categories of fine and common grade by the Listers (1982: 1). An in-depth analysis of the *majolica* tradition is not attempted in this report. The inclusion of specific examples recovered from the wrecks used in this study are important to consider, however, because of their associations with *olive jar-type botijas* and *Columbia Plain*. The examples are presented as they occur chronologically.

16TH CENTURY EXAMPLES FROM WRECKS

Finds from the early 16th century Spanish wreck in Studland Bay, England, so far include examples of *Late Valencian Lustreware* in jug and dish forms (Hurst, report on file, see Hurst, 1986: 42) and *Isabela Polychrome* in dish form (Hurst, report on file). As excavations continue it is expected that a broad variety of *majolicas* will emerge. Later in the century, the first reported *majolicas* from a wreck in the New World come from the Padré Island wrecks of 1554. Spanish and Italian types were recovered including a *Yayal Blue on White plato*, described in Chapter 5 (Fig. 5.1), *Santo Domingo Blue on white* in a *jarro* form (Skowronek, 1987: 105) *Montelupo Blue on White* in plate forms (ibid.), and *Montelupo Polychrome* in plate and shallow bowl forms (ibid. after Lister and Lister 1982: 71 - 72), and a type with a green lead glazed exterior and a white tin glazed interior identified as *Santa Elena Green and White* by Skowronek (ibid.).

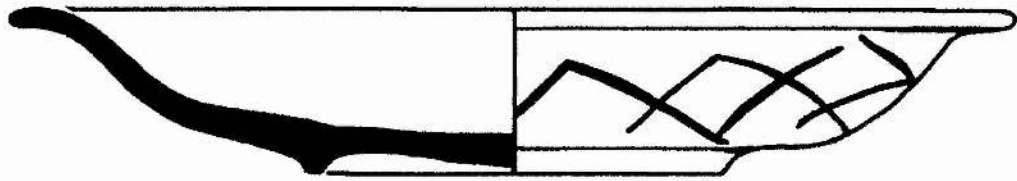
In addition to a variety of undecorated tin glazed earthenwares recovered from the wrecks of the Spanish Armada of 1588 recorded by Martin (1979: 286 - 289), the 1588 wrecks also included *majolica albarelli*, glazed dark blue with a lighter blue design (ibid.: 295 No. 88 & 89, 296). The small drug jars are not uncommon and have

been encountered on other Spanish wrecks in the New World and Bermuda. Hurst notes that "Spanish *alberelli* may be distinguished from Italian as they have footrings while the Italian base is flat... .. and in the later 15th century *albarelli* the angles become more rounded"(1986: 47). Also recorded from the Armada is a plate with a blue underglaze decorated on the exterior with overlapping arcs of thin brush strokes, and an interior motif of lemons, leaves, and berries painted in bright yellow, green, orange, and blue which Martin has identified as Venetian (1979: 295; No. 90, 296).

16TH CENTURY LIGURIAN BLUE ON BLUE

The 1595 wreck of the *San Pedro* contained examples of *majolicas* including two small bowls which fall under Goggin's type category of *Ichucknee Blue on Blue* (1968: 135 - 141) which is identified by a chalky paste with little tempering, decorated with underglaze blue and dark blue designs. His temporal range for the type begins about the middle of the 16th century and reaches its peak by 1600 and declines through the first quarter of the 17th century, eventually disappearing by 1640 - 1650 (ibid.: 39). Further work by Lister and Lister redefined *Ichucknee Blue on Blue* into two different types: *Ligurian Blue on Blue* (1982: 72 - 75) produced in Italy and imported to Spain and *Sevilla Blue on Blue* (1982: 62) produced in Seville and patterned after the Italian version.

Ligurian Blue on Blue is characterised by its light cream coloured paste and blue underglaze with darker blue designs which are precise and carefully painted including exteriors with overlapping arches and interiors of floral, leaf, vines, scroll, and arabesque combinations among others (Deagan, 1987: 70). Its date range as established from terrestrial finds is from between 1550 through 1600 (ibid.: 70).



*Fig. 6.39. Late 16th century. San Pedro.
Ligurian Blue on Blue plato. Scale 1/1.*

Fig. 6.39. *San Pedro*. 1595. (Plate 6.31. Fig. 6.39. is the example on the right.) Two small *platos* with everted almost brimmed rims and small ring bases. Both are underglaze blue with darker blue decoration. The exterior glaze on both examples looks “pin holed”. Exterior designs consist of overlapping arcs below the brim and above the base. The interiors are decorated with a circular vine design bordered by two lines separating the wall. The panel between the lines bordering the central motifs also have vine decorations separated by “V” shaped stems and crude buds with a dot in the centre. The paste ranges from buff to creamy white with fine tempering.

17TH CENTURY SEVILLA BLUE ON BLUE

Designs on *Sevilla Blue on Blue* are typically blue underglaze with darker blue designs consisting of heavy and stylised elements of floral and leaf motifs, birds, animals, geometric patterns or human heads with the exteriors often exhibiting a series of overlapping arcs (Deagan, 1987: 64). Rare additions of yellow or orange overpainted designs have also been reported (*ibid.*). Forms are brimmed *platos*, small *tazas* and shallow bowls with paste characteristics differing slightly from Ligurian examples including a pinkish or yellowish tint (*ibid.*). Finds from the 1622 wreck of the *Atocha* included blue on blue decorated tin glazed wares identified as *Sevilla Blue on Blue*.

Sevilla Blue on Blue represents the most common *majolica* type encountered on the wreck and was recovered in brimmed plate and shallow bowl forms. When originally recovered the examples had a blackened coating similar to the oxidation on *Columbia Plain* examples. After bathing in a diluted hydrogen peroxide solution the original colours were restored. The paste characteristics range from creamy white to buff with interior cores of tannish-pink.

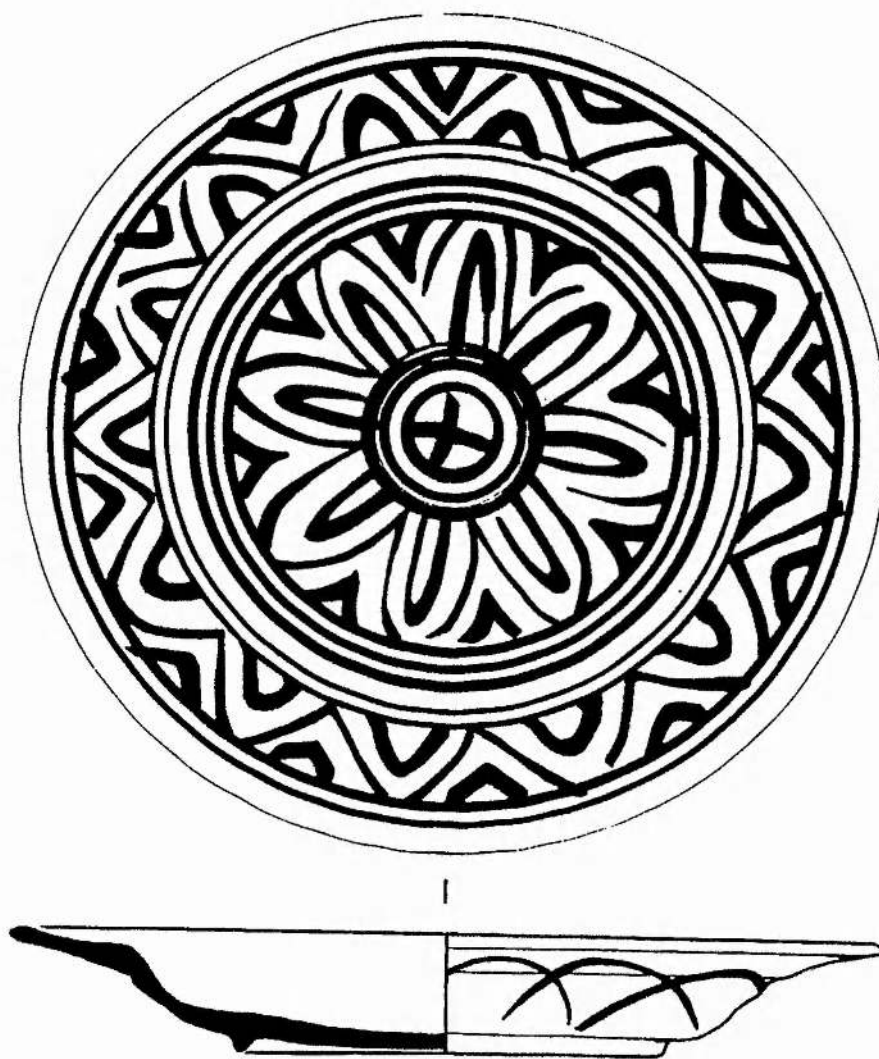


Fig. 6.40. 1622. Atocha. *Sevilla Blue on Blue* plate. Scale 1/2.

Fig. 6.40. *Atocha*. 1622. A *Sevilla Blue on Blue* brimmed plate, almost complete with a flanged rim and curved sides sitting on a small ring footed base. Light blue overall glaze with dark blue decoration. The interior and exterior surfaces show some pitting with some small unglazed streaks under the flanged rim. There are two kiln spacer marks under the rim near the

edge. The interior decoration centres around two thick brush strokes forming an "X", surrounded by a series of circles. Two sets of narrow arcs, one on top of the other, circle the centre design with broad inward facing "V"s in between the arcs, bordered by three concentric lines. On the brimmed rim is another series of concentric arcs with smaller "V" designs inside and outside the arcs, bordered by two concentric lines running along and just over the flange and two concentric lines just below the outer rim. The overall effect, especially when illustrated in two dimensional form, is that of a Sunflower. The design is nearly identical to one on a shallow bowl Fig. 6.44. The exterior decoration is a series of interlocking arcs. Paste is a buff white with little visible tempering. Rim diameter is 219 mm. (Plate 6.32, centre back)

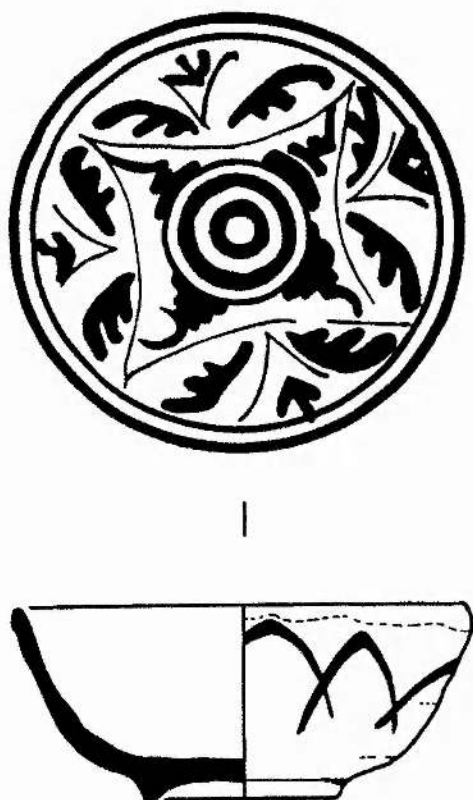


Fig. 6.41. 1622. Atocha. Sevilla Blue on Blue bowl. Scale 1/2.

Fig. 6.41. Atocha. 1622. A complete *Sevilla Blue on Blue* bowl with a light blue tin glaze with dark blue painted decoration and a plain rim, thickened from glaze runover, and footring base. Central interior design is three dark blue circles with four Arabesque designs attached to the outer circle forming the points of an inward sloping square, framing the central design. At least one of the designs represents a crescent moon. Outside the square are simple "V"s with leaf-like designs on either side, and a simple leaf design in the open "V". The interior is framed by two lines circling just below the interior rim. The exterior decoration consists of dark blue painted arcs that intersect at the bottom of the arcs, continuing around the entire bowl. The glaze has a shiny quality to it.

Paste is a creamy white only visible on the bottom of the ring-footed base. Slight turning marks are visible on exterior walls, while the interior is well smoothed. There are no stacking scars visible. Rim diameter is 115 mm. (Plate 6.32, centre left)

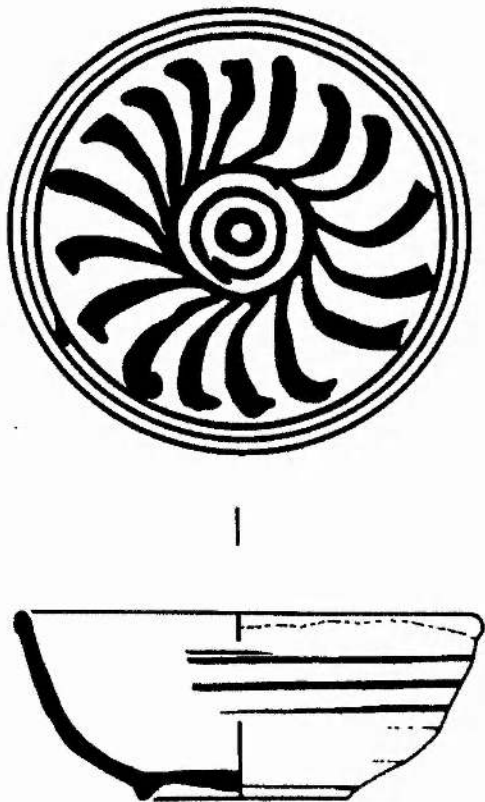


Fig. 6.42. 1622. Atocha. Sevilla Blue on Blue bowl. Scale 1/2.

Fig. 6.42. *Atocha*. 1622. An intact *Sevilla Blue on Blue* bowl with similar construction as above. Shiny light blue glaze with dark blue decoration. The rim profile is slightly thicker than the walls possibly due to glaze coagulation which is indicated in the illustration and similar to the above. Interior floral decoration consists of three central dark blue rings with elongated petals attached to and circling the third ring creating a flower effect. Decoration is bordered by three lines coming to just below the interior rim. The line next to the interior rim is slightly disfigured due to running of the thickened glaze area around the rim. The exterior design consists of three parallel lines encircling the exterior, applied by one continuous brush stroke as the vessel rotated. Slight turning

marks are visible on the exterior while the interior is well smoothed. A chip in the glaze reveals a creamy white paste. Rim diameter 119 mm. (Plate 6.32, centre right)

Fig. 6.43. *Atocha*. 1622. A *Sevilla Blue on Blue* bowl intact and similar to the above but more crudely manufactured. Very thick light blue glaze with dark blue decoration on interior only. Glaze is severely pitted with some small bubbles on the interior and although thick throughout the exterior, there are a few small unglazed spots. Overall appearance suggests a crude imitation of the two previous bowls. Artistic talent is

obviously inferior. Interior base decoration is a centre dot with four dashes connecting it to a circle which is surrounded by two larger circles. The interior sides have a crude floral motif with petals and rough leaf patterns bordered by two circling lines nearing the rim. One section of the lineal border decoration has flowed down due to the excessive glaze near the rim. Rim and ring foot base are slightly worn away revealing a rather grittier cream coloured paste. A fresh break reveals a tan-pink-reddish cored fabric with some small inclusions. Blemishes on the base could be evidence of firing or stacking scars. Rim diameter 111 mm.

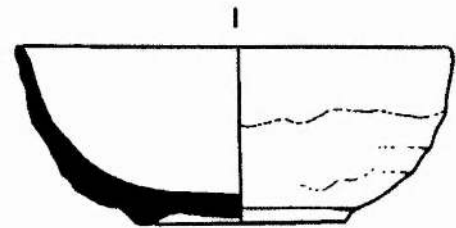


Fig. 6.43. 1622. Atocha. Sevilla
Blue on Blue bowl. Scale 1/2.

(Plate 6.32, far right)

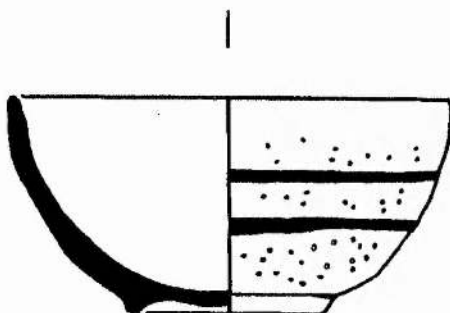


Fig. 6.44. 1622. Atocha. Sevilla
Blue on Blue bowl. Scale 1/2.

Fig. 6.44. Atocha. 1622. A Sevilla Blue on Blue bowl comprised of 4 sherds with light blue glaze with dark blue decoration. Plain rim with ring foot base. A deeper bowl with steeper sides than the other samples. The light blue glaze is thick and running in places. The exterior is heavily pitted. A small bubble is visible in the interior. A generally similar bowl to the others in the collection although the sides are more vertical. The interior decoration is similar to the plate illustrated Fig. 6.40. The interior design is a floral motif bordered by circles with arcs surrounding the central flower. Inside and outside the arcs are smaller, cruder "V" designs bordered by two lines running just below

the rim. The overall effect again is that of a Sunflower. The steepness of the bowl sides and precision of the interior artwork show a high degree of talent, much more so than the quality of ceramic manufacture. Possibly a good painter and a poor potter? The exterior decoration is two simple parallel lines encircling the exterior 19 mm from the rim. Paste revealed on worn rim and base is creamy with a pinkish tan core. Rim diameter is 112 mm. (Plate 6.32, far left)

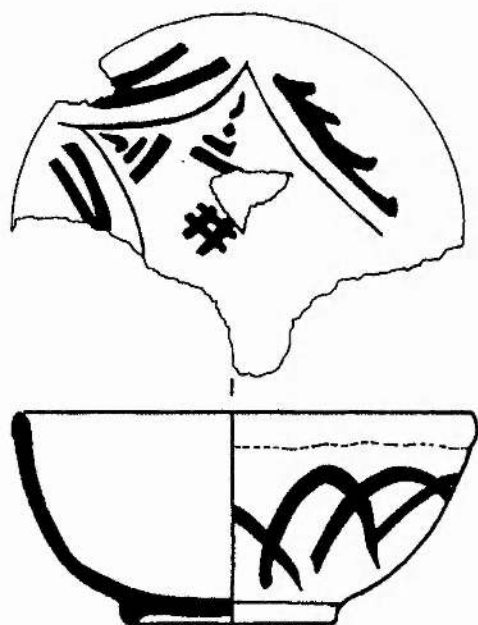


Fig. 6.45. 1622. Atocha. Sevilla Blue on Blue bowl. Scale 1/2.

Fig. 6.45. *Atocha*. 1622. A *Sevilla Blue on Blue* bowl partially reconstructed consisting of 11 sherds forming two thirds of the vessel which has a light blue glaze with dark blue decoration. Similar to the above examples. Interior design appears less dependent on a central motif. Centre base contains crude dashes and a small lattice design surrounded by an inward sloping square. Outside the square are rough dashes in a crude floral fashion. Exterior decoration consists of a series of broad brush stroke arcs, that overlap around the entire exterior. Paste is a creamy white. Rim diameter 116 mm.

In addition to the blue on blue designs recovered from the 1622 wreck, two sherds were recovered with a light blue underglaze, darker blue decoration and orange overglaze decoration which may be described as *Sevilla Polychrome* (Plate 6.33.) As noted above the examples are rare.



Plate 6.32. 1622. Atocha. Majolica plate and bowls.



Plate 6.33. 1622. Atocha. Majolica polychrome sherds.

17TH CENTURY BLUE ON WHITE MAJOLICAS

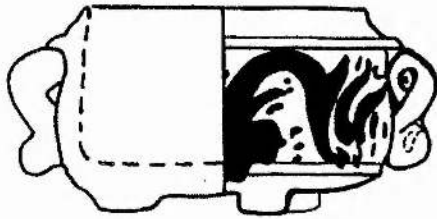


Fig. 6.46. 1621. San Antonio.
Salt cellar. Scale 1/2.

Fig. 6.46. Plate 6.35. From the 1621 wreck of the *San Antonio* this small blue on white glazed *salero* or salt cellar (Lister and Lister, 1976: 79) stands on three round moulded feet on a flat bottom. It has straight sides and an exaggerated lip which leads to a thin vertical rim. Two small "S" handles

are attached just below the lip and to the mid-section. The exterior is decorated on the sides with broad brush strokes of crescents and dashes. The lip and rim have a continuous thin line that encircles the top several times. The bottom is decorated with a snake like motif surrounded by crescent dashes.

Blue on white *majolicas* of European origin from the *Atocha* (1622) include seven sherds from the base, wall and rim of a brimmed plate with a ring-footed base decorated in blue on white with overlapping arcs in thin precise lines on the exterior. It has an interior decoration of broad stroke palmette designs bordered by thin precise lines with three thin lines bordering the interior central design (Plate 6.34.). Goggin's description of *Ichucknee Blue on White* interior designs of the central floral motifs surrounded by the rim bands divided into panels by geometric motifs (1968: 149) fit the design elements of the sherds. The design is similar to the above *Sevilla Blue on Blue* examples with the exception of the underlying white glaze, and the thinner more precise lines. The paste is creamy-tan.



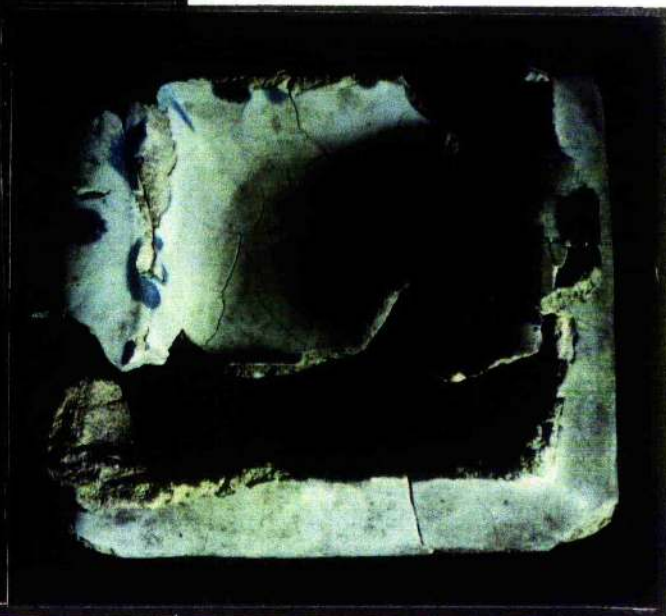
Plate 6.34. 1622. Atocha.
Ichtucknee Blue on White.



Plate 6.35. 1621. San Antonio.
Majolica salt cellar.



Plate 6.36. 1622. Atocha.
Majolica ink well or salt
cellar.



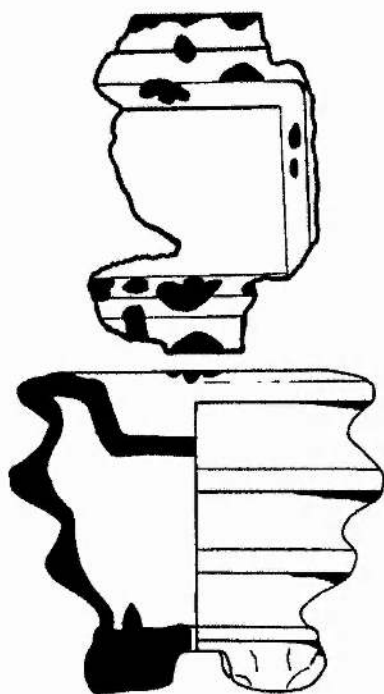


Fig. 6.47. 1622. Atocha.
Salt or inkwell Scale 1/2.

Fig. 6.47. *Atocha*. 1622. Also recovered from the wreck of the *Atocha* was this blue on white, *salero* or possibly a *tintero* or inkwell (Lister and Lister, 1976: 86) found near the main wreck deposit (believed to be the lower cargo hold). Its presence in this area of the wreck suggests it was part of the cargo rather than an item for use on board. The piece stands on four paw-like feet and is tiered, almost in the shape of a Chinese pagoda, with the recessed top decorated around the rim. The claw feet have been described as characteristic of *tinteros* (ibid.). The design looks Asian-influenced. A similar form, also tiered and standing on four paw feet is in the Italian *majolica* collection of Arthur M. Sackler and is dated to the late 16th early or 17th century.

Squared rim measures 90 mm across. Base at feet is 61 mm.

Fig. 6.48. *Atocha*. 1622. A partial rim which may be classified as *Santo Domingo Blue on White*, possibly from a small *pocillo* with white tin glaze and blue decoration. The vessel wall indents slightly then appears to evert. The sherd may well be the rim and partial shoulder of a small

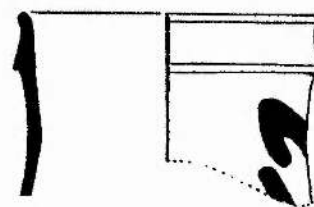


Fig. 6.48. 1622.
Atocha. Scale 1/2.

cup. The thick white glaze is pitted, bubbled and worn away at the edges to reveal a chalky buff coloured fabric. Decoration consists of a crude painted curved slash which may have been part of a rough floral motif. Estimated rim diameter 76 mm.

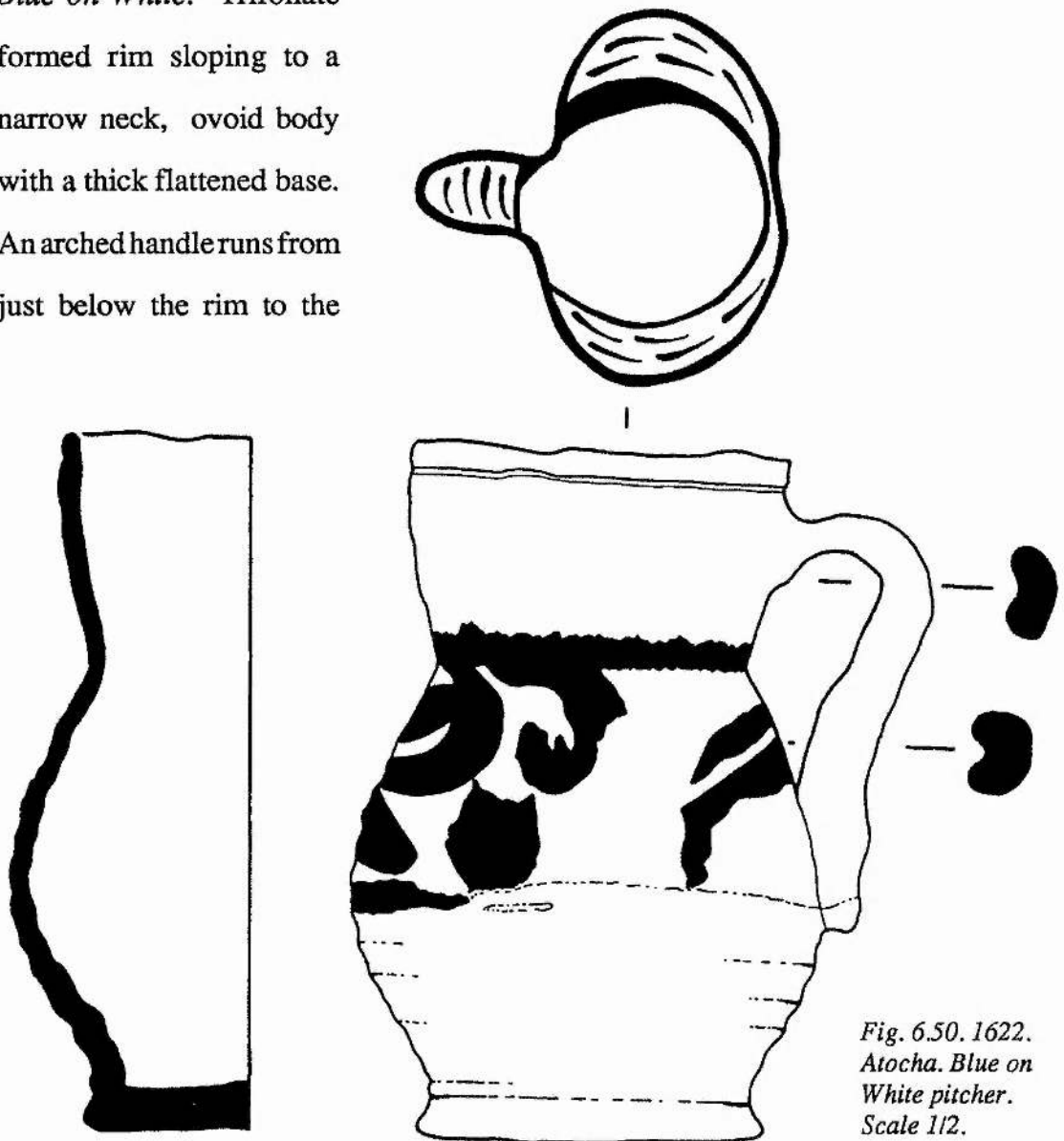


Fig. 6.49. 1622.
Atocha. Scale 1/2.

Fig. 6.49. *Atocha*. 1622. The base of a small blue on white cup or small jar. The sherd is part of the body and attached ring footed base. Well smoothed exterior with finger throwing marks evident

on the interior walls. There is a thick off-white glaze inside and out that has eroded along the broken edge and in the middle of the rounded base near the ring foot. Decoration is on the exterior only and comprises a crude blue sloping brush stroke running parallel to the break. May be classified as *Santo Domingo Blue on White*. Paste is cream to buff coloured with fine mineral tempering. Estimated base diameter is 55 mm.

Fig. 6.50. Plate 6.37. Atocha. 1622. An intact pitcher identified as *Santo Domingo Blue on White*. Trifoliate formed rim sloping to a narrow neck, ovoid body with a thick flattened base. An arched handle runs from just below the rim to the



mid body opposite the pouring spout. Glaze is a light grey with a hint of blue mixed in under dark blue decoration. The underlying glaze may have changed colour from

immersion in seawater. Interior is an oxidised tin glaze. The exterior design consists of two thick bands of dark blue encircling the pitcher at the narrow neck and the middle of the ovoid body, forming the border of a floral/leaf decoration centred under the spout. Dark blue designs appear to be running as if the decoration was applied while the underlying glaze was still wet.

This may also explain the bluish tint to the

underglaze. The outside of the handle has six horizontal slashes in dark blue. Goggin noted that the handles on *Santo Domingo Blue on White* pitchers were always decorated with dashes (1968: 132).

Finger throwing marks are prevalent on the interior and exterior body. Neck and rim areas are well smoothed. Paste is creamy white with fine mineral tempering. Pitch-

ers such as this appear to be common

table items with similar examples pictured in Murillo's *The Angel's Kitchen* and

Velázquez's *The Old Cook* circa 1620. Base di-

ameter 92 mm.

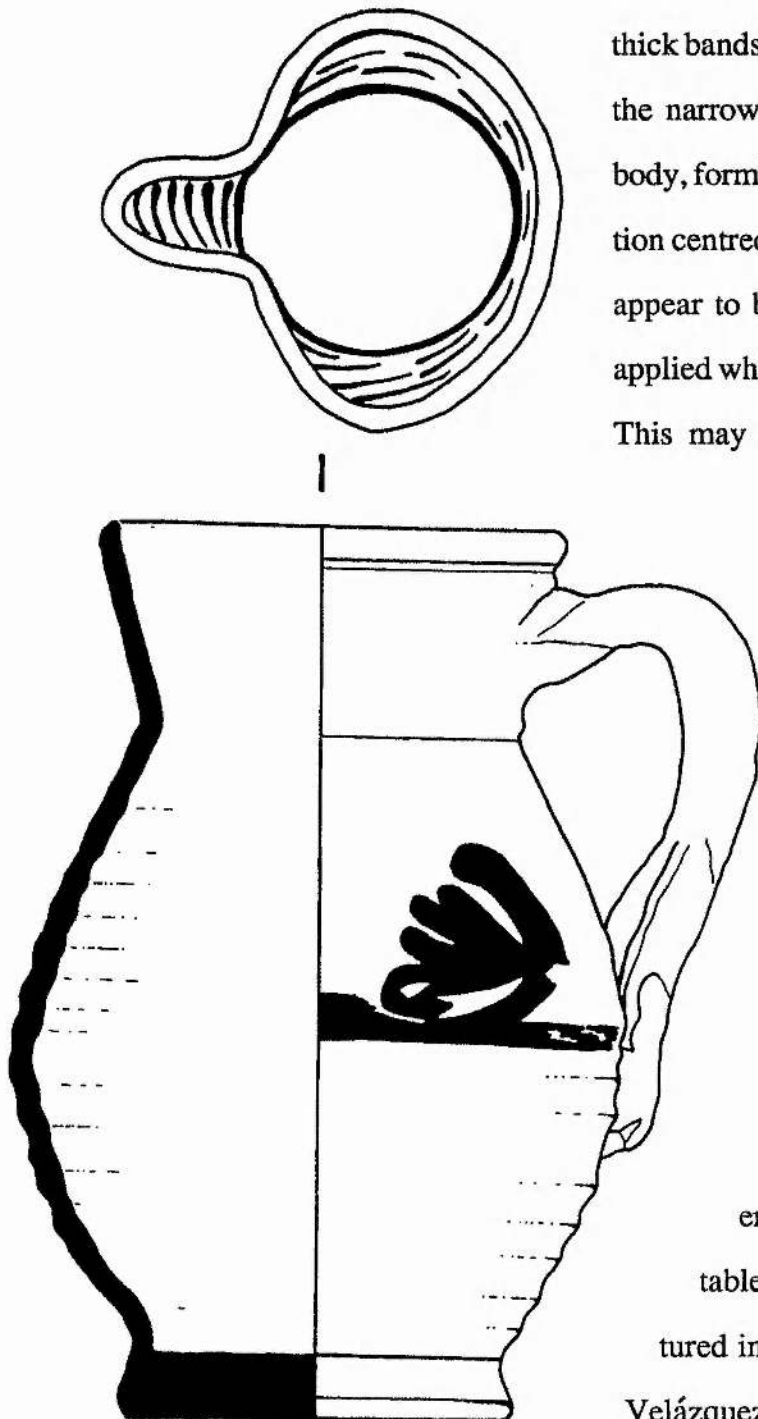


Fig. 6.51. 1621. San Antonio. Blue on White pitcher. Scale 1/2.

Fig. 6.51. *San Antonio*. 1621. A pitcher similar to the above although larger. The form is nearly identical to the 1622 example. The glaze is stained dark blue-grey with some underlying design visible. Paste is buff coloured. Two vessels on contemporaneous wrecks may suggest that the form was a common shipboard item in the early 17th century.

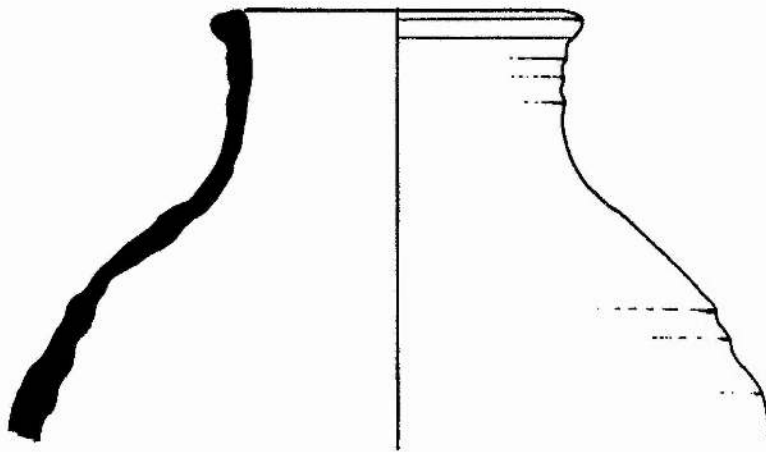


Fig. 6.52. 1622. *Majolica* jar rim sherd. Scale 1/2.

Fig. 6.52. *Atocha*. 1622. A rim and shoulder section with an everted rim lip and narrow neck with outward sloping shoulders. There is a tin glaze stained dark on the interior to almost black. The outside is thickly glazed and mottled in places ranging in colour from dark grey to brown

and green in places. This may have been a green glazed ware although its original colour is hard to discern due to the effects of immersion in seawater. Paste is thick buff to pink cored fabric with creamy white exterior. Tempering consists of very fine mineral particles. Rim diameter is 94 mm.

Three additional bases were recovered from the 1622 wreck with *majolica* paste, thin walls, and smoothed exteriors. Throwing marks are visible on the interiors. Two have ring-footed bases with one slightly countersunk. The only visible decoration on one of the ring-footed examples is a small patch with off-white underglaze and a darker blue horizontal brush stroke.

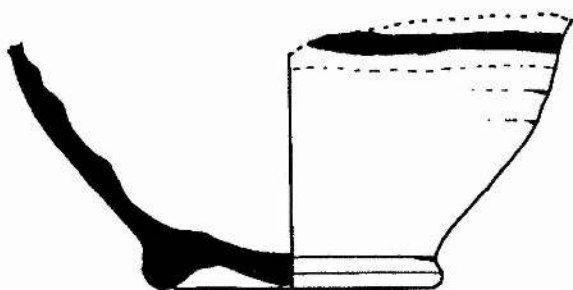


Fig. 6.53. 1622. Atocha. Majolica base. Scale 1/2.

Fig. 6.53. *Atocha*. 1622. A complete base probably from a *Santo Domingo Blue on White* jar or pitcher. This example may be a variation of the above pitcher with a slightly lighter underglaze and added ring-footed base. Exterior base is fairly well smoothed with turning

marks visible on the interior. Paste is creamy white to buff-coloured with pinkish core. Base diameter is 76 mm.

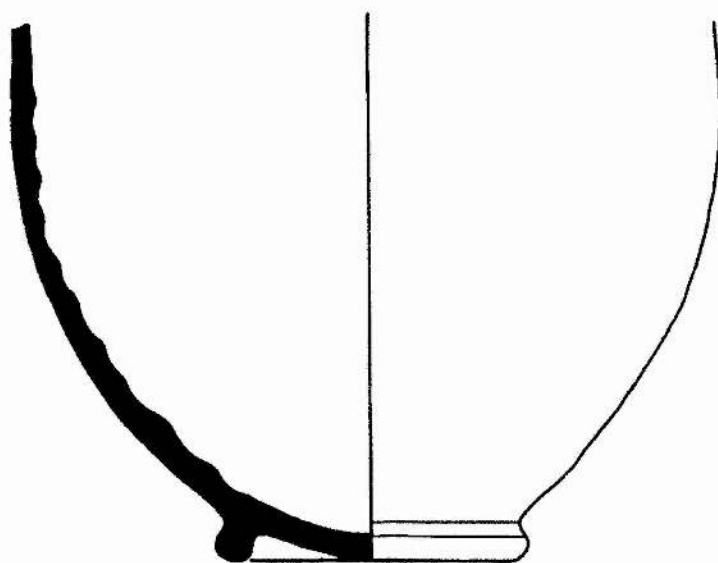


Fig. 6.54. 1622. Atocha. Majolica paste base. Scale 1/2.

Fig. 6.54. *Atocha*. 1622. A complete base similar to Fig. 6.53 except there are no traces of glaze, and more care and attention to detail were taken in construction. The ring foot base is evenly applied and well smoothed. Walls are thinner and paste appears more compact. Some small pitting of the fabric occurs on the exterior walls but

may be due to marine organisms. Colour is creamy white with minute mineral tempering. Although this example is an unglazed creamy white ware with no visible glaze, the paste is more similar to *majolica* wares than to *bizcocho*. Exterior is well smoothed while turning marks are evident on the interior vessel walls. Base diameter is 79 mm.

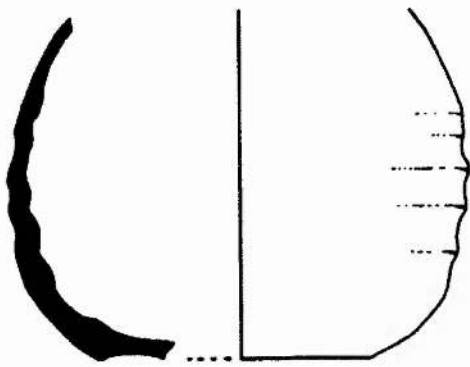


Fig. 6.55. 1622. *Atocha*.
Tin glazed base. Scale 1/2.

Fig. 6.55. *Atocha*. 1622. A partial base with cruder manufacturing and a greying tin glaze inside and out. Shoulders slope sharply from assumed narrow neck. Throwing marks are prevalent on the mid body inside and out. The base is well smoothed and countersunk. Base diameter approximately 68 mm.

Plate 6.38. *Atocha*. 1622. A partial rim sherd from a thick *ponchero*. The rim profile is similar to *Columbia Plain* bowls illustrated from 1622 in Chapter 5, Figs. 5.22 - 5.23. The underglaze on the exterior and interior is a grey-white which appears stained or oxidised. Decoration on the interior rim lip is a wavy line and just below the rim are three concentric lines bordering two wavy lines over two concentric lines with overlapping curved broad brush strokes from the central design. The outer rim would be classified as *Yayal Blue on White* while the interior may be classified as *Santo Domingo Blue on White*. Paste is buff with mineral tempering. As the form appears in *Columbia Plain*, and *Yayal Blue on White* has been described as a decorated *Columbia Plain* (Hurst, 1986: 59), *Yayal Blue on White* as a type description is used here.

Plate 6.39. *San Antonio*. 1621. A similar form to the above and illustrated in Chapter 5, Fig. 5.23. The decoration consists of pairs of dashes on the rim with concentric lines bordering a floral pattern of stems and leaves. The floral pattern is similar to those on the *Santo Domingo Blue on White* pitchers.



Plate 6.37. 1622. Atocha.
Santo Domingo Blue on White pitcher.



Plate 6.38. 1622. Atocha.
Yayal Blue on White bowl.



Plate 6.39. 1621. San Antonio.
Santo Domingo Blue on White
bowl. Courtesy Bermuda Maritime
Museum.

17TH CENTURY NEW WORLD MAJOLICAS

Represented by a relatively small sample from the wreck of the *Atocha* (1622) are examples of New World *majolicas*. **Fig. 6.56.** *Atocha*. 1622. This piece consists of seven sherds from the rim and body of possibly two plates identified as *Panama Plain* (Deagan, 1987: 92). The glaze on one sherd is thick off-white cream to almost yellow

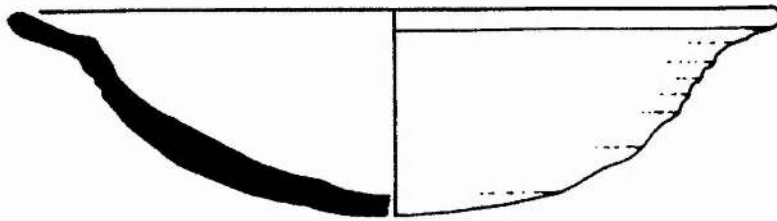


Fig. 6.56. 1622. *Atocha*. *Panama Plain* plate. Scale 1/2.

glaze with grey to black speckles on both sides with the other examples varying shades of grey to dark grey with all showing evidence of pinholing. As some discoloured sherds ap-

pear to come from the same vessel it is probable that the staining was caused from deposition on the wreck, possibly from a close proximity to iron objects. The paste is a brick red with visible mineral tempering. Estimated rim diameter is 194 mm. Vessel walls range from 5 mm to 10 mm.

Plate 6.40. *Atocha*. 1622. A second category of New World *majolica* from the 1622 wreck is identified as *Panama Blue on White* first described by Long (1967; after Deagan, 1987: 92). It is characterised by designs painted on an off-white background with lines uneven and fuzzy, depicting floral motifs, scrolls, loops, and geometric elements, most imitating Italian influenced designs (*ibid.*). The 12 sherds recovered from the 1622 wreck consist of brimmed rim, body, and ring foot base sherds from possibly one plate and a small bowl. The exterior is covered in a white with grey toned glaze with some pinholing. The interior design on the ring foot base sherd is a floral motif bordered by a concentric line. The designs on the interior brimmed lip are a series of thick brush strokes in pyramid fashion with smaller curved lines separating the larger strokes. The paste is a brick red.



Plate 6. 40. 1622. Atocha. Panama Blue on White.



Plate 6.41. 1641. Concepción. San Juan Ploychrome.

As discussed in Chapter 5, the *Concepción* (1641) carried New World manufactured common tableware. The majority of the collection is now on display at the Museo de las Casas Reales in Santo Domingo, Dominican Republic and consists primarily of *San Juan Polychrome* (Deagan, 1987: 74), called *Fig Springs Polychrome* by Goggin and dated to the period 1610 - 1660 (1968: 151, 154). The ware was later reclassified to reflect its origins better (Lister and Lister, 1982: 15 - 18). The type is distinguished as having a red paste with an underglaze of greyish-white, and designs in yellow and "washed-out greyish blue" with central motifs consisting of a central palmette (ibid.). The central figures are not usually bordered. The forms from the *Concepción* collection on display include wide brimmed ring-foot plates, ring-foot bowls, pitchers, and globular cups with tall everted rims carrying designs in blue, yellow-orange and blue. Others are undecorated.

Plate 6.41. *Concepción*. 1641. A complete brimmed plate with a crazed grey-white underglaze. The central motif is a palmette with broad grey blue brush strokes surrounding an orange-yellow broad brushed stem with four appendages. The design is similar to those illustrated in Lister and Lister (1982: 16, Fig. 3.4).

Plate 6.42. *Concepción*. 1641. A nearly complete wide brimmed plate with a crazed off-white to green underglaze. The interior is decorated in a central floral design of blue with yellow and brown glaze additions. The brimmed rim has a ribbon like design which Goggin noted (1968: 152) and broad brushed lines of blue with brown highlights. Similar rim decorations are illustrated in Lister and Lister (1982: 16; Fig. 5.3).



Plate 6.42. 1641. Concepción. New World majolica plate.



Plate 6.43. 1641. Concepción. New World majolica cups and bowl.

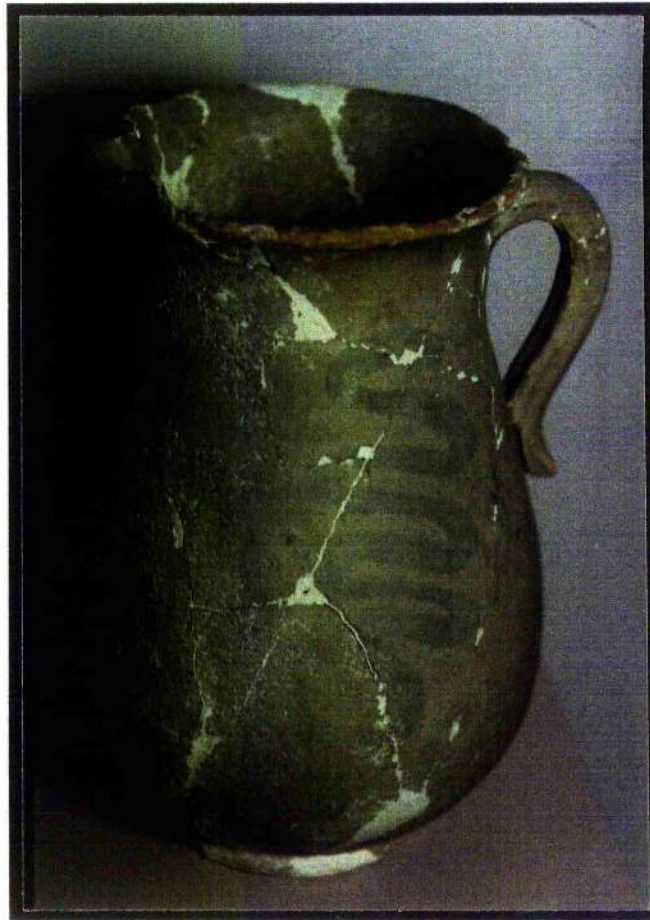
Plate 6.43 (left). *Concepción*. 1641. A globular cup with a high everted rim and a ring footed base. The underglaze is an off-white to grey-green. The design is on the globular body and consists of a simple leaf or upside-down apple with a yellow brush stroke in the design.

Plate 6.43 (middle). *Concepción*. 1641. A similar cup with an off-white to grey-green underglaze. The glaze looks a bit shinier and is crazed, although the cracks are wider spaced. The decoration consists of six broad transparent blue brush strokes forming a floral or leaf pattern in the middle of the globular body. There is no addition of yellow or orange decoration. A small chip in the glaze reveals a brownish tan paste with visible tempering.

Plate 6.43 (right). *Concepción*. 1641. A small bowl with a ring foot base and an off-white to green glaze which is crazed. This example is an undecorated example which may constitute a classification as *San Juan Plain*. Throwing marks can be perceived on the exterior walls. The paste is barely visible and looks brownish tan with visible tempering.

Plate 6.44. *Concepción*. 1641. A reconstructed pitcher with a creamy-green dull underglaze. The paste is tannish-red and visible on the rim. The decoration consists of a one stroke transparent blue vertical ribbon-like design on the wall. The handle has a blue dash design on the outside.

Plate 6.45. *Concepción*. 1641. Two *San Luis Blue on White* bowls. The type was first identified by Goggin as contemporaneous with *Fig Springs (San Juan) Polychrome* (1968: 154 - 158). Both underglazes are glossy cream to green. The one pictured left has an interior dark blue central motif comprised of a circle with an "X" partially filled



*Plate 6.44. 1641. Concepción.
New World majolica pitcher.*



Plate 6.45. 1641. Concepción. San Luis Blue on White bowls.

in with what looks almost like a fish with vertical dashes on its back, opposite a series of heavy dots. The motif is bordered by three lighter blue concentric lines and a ribbon design, and broad crude designs bordered by a single lighter blue band just below the rim. The exterior was not visible. The design fits the Listers description of *San Luis Blue on White* (1982: 18).

The second bowl in **Plate 6.45** (*right*) has an interior central leaf motif in thick dark blue glaze surrounded by thick dots and banded by three lighter blue concentric lines. The band above has a combination of thick dark blue dots which merge in places bordered by two light blue concentric lines just below the rim.

18TH CENTURY MAJOLICAS

The wrecks of the *Tolosá* and *Guadalupe* (1724) revealed substantial amounts of *Columbia Plain* wares discussed in Chapter 5. Also among the finds in the shipwreck repository of the Museo de las Casas Reales in Santo Domingo are two undecorated examples of New World-manufactured tin glazed plates.

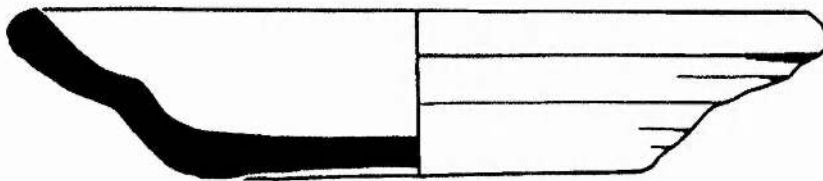


Fig. 6.57. 1724. *Tolosá*. New World majolica plate. Scale 1/2.

Fig. 6.57. *Tolosá*. 1724.
A fairly large glazed plate crudely finished on the exterior with tooling marks visible. The glaze

is greenish-cream heavily crazed and covers the whole interior running over the lip and down the sides of the exterior. There are dark patches in the glaze colour which may be from a reaction on the wrecksite. The rim is thickened and slightly everted instead of brimmed. The base is slightly concave. The walls are thick and the paste is a light brick red, fine and hard.

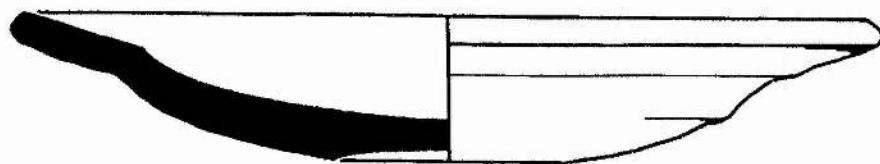


Fig. 6.58. 1724. Tolosá. New World majolica plate. Scale 1/2.

Fig. 6.58. Tolosá. 1724. The second tin glazed plate is blackened by immersion and

it is difficult to tell whether it was originally greyish blue or off white to cream-green. The walls are slightly thinner than the above with a more horizontal rim. Throwing marks are visible on the bottom of the bowl while the interior is smoothed. Triple firing scars are visible on the interior 4.9 cm apart. The base is countersunk. The paste is whitish tan with no visible tempering.

The *Tolosá* and *Guadalupe* (1724) wrecks also included a collection of small cups or *pocillos*, with thin walls and flaring sides leading to small everted lips standing on thin everted ring foot bases. The *pocillo* form is characteristic of Mexican *majolicas* beginning in the late 17th century and is inspired by Chinese tea cups (Lister and Lister, 1976: 73). The cups were primarily used for drinking a chocolate beverage (ibid.).

Finds from the 1724 wrecks are decorated with a crazed off-white underglaze, with light blue decoration which is thin and sometimes transparent. The transparent quality, however, may be a result of wear from abrasion. The paste is tannish. The cups are all similar. The decoration appears on the body of the cup with a thick or thin blue band border just below the rim and two small border lines at the top of the ring-footed base. The bases are undecorated. *Pocillo* finds were also represented in the collection from the *San José de las Animas* wrecked in 1733 (Logan, 1977: 26, 75; Fig. 8 #b, d; 87, Fig. 14b).

The type can be classified as a fine *Puebla Blue on White*, first identified by Goggin (1968: 190 - 195), which is known to occur in *pocillo* form with motifs based on Oriental or European themes with intricate and precisely executed designs (Deagan, 1987: 84).

Fig. 6.59. *Tolosá*. 1724. A *pocillo* from the *Tolosá* or *Guadalupe* which is decorated with a series of curved brush strokes with ribbon-like heads coming from a central hub and blobs with a series of thin lines extended from the centre. It is bordered by a wide

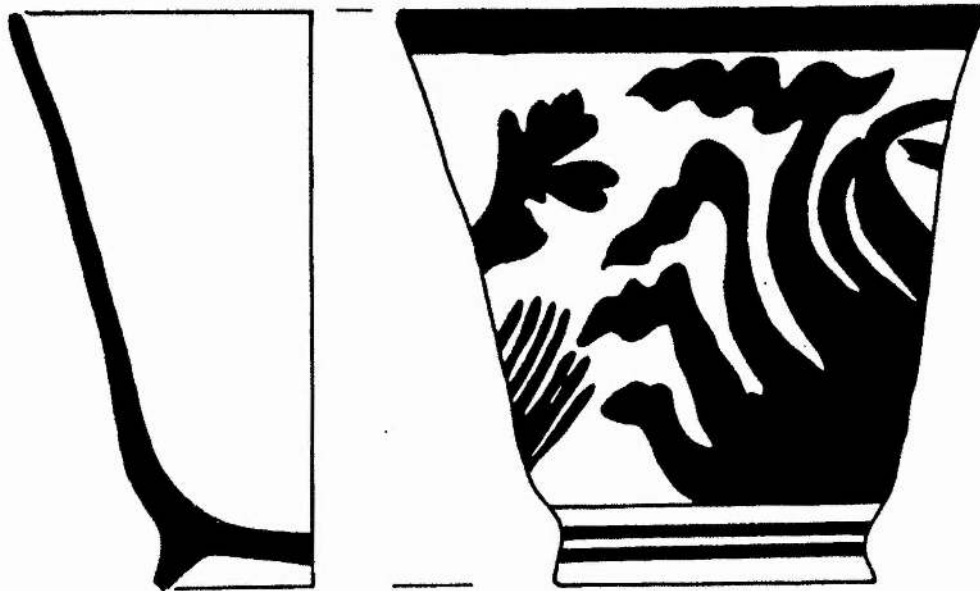


Fig. 6.59. 1724. Tolosá. Majolica pocillo. Scale 1/1.

band at the top just below the rim and two concentric lines at the top of the ring foot base. The design is similar to **Plate 6.47**.

Plate 6.47. *Tolosá*. or *Guadalupe*. 1724. A *pocillo* on display at the Museo de las Casas Reales, Santo Domingo, similar to **Fig. 6.59**. in design. **Plate 6.48.** *Tolosá*. or *Guadalupe*. 1724. A similar *pocillo* on display at the Museo de las Casas Reales, Santo Domingo, with a floral and leaf design banded by a thin line just below the rim



Plate 6.47. 1724. Tolosá or Guadalupe. Majolica pocillo.
Plate 6.48. 1724. Tolosá or Guadalupe. Majolica pocillo.



Plate 6.49. 1724. Tolosá or Guadalupe.
Majolica pocillo.

and two concentric lines just above the ring-footed base. A similar *pocillo* to the above also on display there has a purer white underglaze which is crazed. The decoration is similar with a floral/leaf motif and the larger three pedal designs bordered by a thin line. There is a thin line bordering the top of the decoration just below the rim and two concentric lines at the top of the ring-footed base. The lines on the base are running at one point.

Plate 6.49. 1724. A similar *pocillo* on display at the Museo de las Casas Reales, Santo Domingo with a definitive tree design with branches and simple leaves. Below the tree are a series of vertical lines emanating from solid blue ground. The design is bordered on the top below the rim with a thick blue band and two small lines at the top of the ring-footed base.

CONCLUSIONS

The assemblages of decorated ceramics from shipwrecks have received considerably more study than the common wares which are the focus of this work. Examples of decorated wares from wrecks that have not previously been recorded are presented briefly in this section. It is evident that Spanish-made *majolicas*, beginning with those from the *Concepción* in 1641, begin to decline in frequency and by the 18th century are virtually replaced by New World substitutes. For a description of the wares encountered on the 1733 wreck of the *San José de las Animas* see Logan (1977) and for the 1766 wreck of the *El Nueva Constante* see Pearson (1982: 26 - 30).

Several examples of export porcelain have also been recovered from Spanish shipwrecks and encountered in this study. Porcelain has received a great deal of archaeological attention and a chronology of types recovered in colonial contexts can

be found in Deagan (1987: 96 - 102) which includes finds from the *Concepción* (1641) and the 1733 plate fleet wrecks. Logan (1977) has also recorded types from the 1733 wreck of the *San José de las Animas* wrecked in 1733. Examples from the Spanish Armada of 1588 are recorded by Martin (1979) and examples from the *Santo António de Tanna*, the Portuguese wreck at Mombassa wrecked 1697, are recorded by Sassoon (1984).

Porcelain finds are most common on New World wrecks which traded from Veracruz, Mexico, which served as the trans-shipment point for the Manila galleon trade. Wrecks from the *Terra Firme* fleet (*Atocha*, 1622; *San Antonio*, 1621) and those on the inbound passage (*Tolosá* and *Guadalupe* 1724) do not include examples known to this researcher.

SUMMARY AND CONCLUSIONS

SUMMARY AND CONCLUSIONS

The pottery finds from shipwrecks have considerably expanded our knowledge of the most common ceramic types associated with Spanish ships of the American colonial period. Because shipwrecks can accurately be dated the pottery finds have been used to refine existing typologies. And because wrecks include intact examples, complete vessel forms are available for a more precise evaluation of evolutionary changes in shapes.

By concentrating on the more common ceramic traditions, this report has answered specific questions as to the evolution of *olive jar-type botijas* and *Columbia Plain*, creating typologies and a set of common characteristics which may be helpful in the dating of unassociated finds of such material. The typologies are based on accurately dated shipwreck examples and the forms illustrated are the actual finds involved. In addition to typologies for the two most common traditions, other common ceramic types found on wrecks have helped to refine dating criteria for their respective types.

The most fulfilling aspect of this research was to continue to build on the foundation created by John Goggin (1960) and to piece together the elusive picture of his "*Spanish olive jars*" which have been renamed *olive jar-type botijas*. Using body shape and rim styles based on the intact finds from shipwrecks, a more precise temporal structure has been developed. Shapes of jars and rim forms have been redefined within this dating framework. Included in this study is the identification of a new flat bottomed type which appears to be limited to the first half of the 17th century. The jars and their amphora ancestors had been a part of the Mediterranean trade system for centuries and their continuation into the centuries of New World exploration and colonisation comes as no surprise.

Because wrecks offer uncontaminated artifact groups, it is tempting to use the numbers of jars found on the wrecks, and their volumes, as gauges of economic processes. Jar capacities seem to have approximated specific volumes which showed changes through time. There is much scope for more research in this area.

The second common tradition that is focused on here is *Columbia Plain* common table ware. The two main forms, *platos* and *escudillas*, have also been encountered in sufficient quantity to create accurate typologies and to establish characteristics which can be used as temporal indicators. Most prolific of the characteristics, and useful in dating finds, is the elimination of an interior central obverse boss on the *platos* around the beginning of the 17th century. Evolution of pottery traditions can also be observed from the finds—for example, both the *olive jar-type botijas* and *Columbia Plain* forms show evidence of a deterioration of technique over the period studied.

The ability to create typologies, although greatly enhanced by the utilisation of accurately dated and intact shipwreck finds, is still prone to chance, and to the whims of individual potters and archaeologists. Several attributes overlap and correlations are necessary to secure confident assessments. By combining the attributes of *olive jar-type botijas* with the attributes of *Columbia Plain*, however, collections can be dated with relative surety. An example of this cross checking was employed on a 16th century wreck off Bermuda. The **Type B** *olive jar-type botijas* were larger on average than 17th century jars, and the **Type A** jars were more squat in form than later examples. But with **Type 3** rims spanning the 16th and 17th centuries the rim evidence alone would have limited diagnostic value. However, the associated *Columbia Plain platos*, with their distinctive central obverse humps would strongly point to a 16th century date. The *majolica*, which also demonstrated distinctive 16th century attributes provided virtually unassailable final verification.

As more shipwrecks are found, important temporal gaps will be filled and new questions will be addressed. By combining traditional archaeological approaches to accurately dated shipwrecks with new techniques of fabric analysis scholars will have the opportunity to bring order and confidence to problems previously obscured by uncertainty and confusion. It is hoped that legislation and education will help to curtail the salvage of historic vessels and that adequate funding will become available to study properly the valuable resource represented by shipwrecks. As we learn to deal with the large quantity of ceramic material involved, and apply strict standards to the excavation of underwater sites, the prospect for future study in this field is almost unlimited.

Over thirty years ago this prospect was recognised by John M. Goggin, whose pioneering work has provided me with inspiration and a sure foundation upon which to build. I hope that my work will serve as a similar base for others.

GLOSSARY

Glossary of Spanish and technical terms used

- albarelli* : Spanish: *albarello*. Small drug jars with an hour glass shape.
- alcancia* : used like a grenade, a small jar shaped like an hour glass with a small everted mouth.
- almiranta* : the armed escort galleon taking up the rear of an armada of ships.
- almud* : a measuring device used for apportioning victuals aboard ship
- Armada* : used with a capital A, refers to the Spanish Armada of 1588
- armada::* a convoy of ships
- arroba* : a measure of liquid equal to about 12.5 litres. 1/2 arroba would equal c. 6.25 L.
- bacin* : a chamber pot with straight sides, horizontal rim, usually with small handles, and flat bottom.
- botijas* : used here as a general and interchangeable name for olive jars (see olive jars).
- botijas peruleras*: used as a general and interchangeable name for the larger olive jar types.
- capitana* : the armed escort galleon which leads the armada, serving as the command vessel.
- Casa de Contraction* : (abbreviated Casa) House of Trade - branch of government which controlled trade to the Indies.
- cockspur* : a three-pronged spacer used for separating pottery while being fired causing stacking scars.
- cuartilla* : a liquid measure of 4.03 litres.
- cuartillo* : a liquid measure of about 0.5 litres.
- escudilla* : a small straight-sided bowl with sides which carinate towards the base.
- esparto* : grass used for weaving into mats for protective packing or other purposes.
- fanegas* : a measure of 1.6 bushels.
- flota* : the convoy of ships which sailed from Spain to Mexican ports.
- galeones* : the convoy of ships which sailed from Spain to South American ports.
- hydroceramo* : a globular jar with a flat bottom and a small spout on the upper shoulder used as a water cooler and dispenser.
- jigger and jolly* : a pottery technique which uses a mould on the wheel head (jolly) to form the interior of a plate or bowl which is shaped and trimmed on the exterior with a template (jigger).
- lebrillos* : a wide bowl or basin with nearly vertical walls and a flat base
- majolica* : a general descriptive name for tin glazed pottery
- maravedí* : the basic Spanish monetary unit
- nao* : a type of Spanish merchant ship.
- olive jars* : Spanish utilitarian storage jars with rounded bottoms, broad shoulders, and a small mouth
- orza* : a pear-shaped jar with broad shoulders, flat base and everted rim.

pinholed : little pin holes in the glaze which look like miniature burst bubbles.

pipa : a wooden cask with a capacity of around 27 1/2 arrobas.

plato : a plate with a countersunk base and flaring sides without a horizontal rim.

pocillo : a small cup of a style similar to Chinese tea cups.

ponchero : a large serving bowl usually with a ring-foot base, flaring sides and slightly everted rim.

quintal : a unit of weight which equals 46 kilograms.

real : a coin worth 34 maravedis in Spain and 44 maravedis in Mexico.

salero : a salt-cellar either shaped like a small bowl or moulded square usually with small feet for the base.

self-slip : an unglazed vessel with its own unfired coating or slip.

taza : a small bowl with vertical sides sloping to a base used as a drinking vessel.

tinaja : a very large jar with lipped rim, broad shoulders, and sharply curving sides to a small flat base.

tintero : a small inkwell usually on paw-like feet, sometimes tiered.

tonelada : a displacement measure equal to the size of three pipas, or 5 botijas of wine.

TABLE OF CERAMICS FOUND ON WRECKS

TABLE OF CERAMIC TYPES FOUND ON WRECKS

(REGULAR TYPE FACE INDICATES EXAMPLES ARE INCLUDED IN THE TEXT. ITALICS INDICATES REPORTED IN OTHER SOURCES. IN QUANTIFYING EXAMPLES FROM SALVAGED WRECKS CARE SHOULD BE TAKEN IN USING THE TYPES RECORDED FROM EACH WRECK AS REPRESENTATIVE OF THE TOTAL ASSEMBLAGE DUE TO THE NATURE OF THEIR RECOVERIES.)

Studland Bay Wreck, early 16th c.

Columbia Plain
Late Valencian Lustreware
Isabella Polychrome
Saintonge
Merida-Type

The Spanish Armada of 1588

Olive jar
Columbia Plain
Tin glazed earthenware
Merida-Type ware
Glazed Merida-Type
Porcelain
Venetian Ware

The Harry Cox Wreck, late 16th c.

Olive jar
Porcelain

San Antonio, 1621

Olive jar
Columbia Plain
Santo Domingo Blue on White
Yayal Blue on White
Feldspar Inlaid Redware
Yayal Blue on White

Padré Island Wrecks of 1554

Olive jar
Yayal Blue on White
Tin glazed earthenware
Santo Domingo Blue on White
Montelupo Polychrome
Montelupo Blue on White
Santa Elena Green and White

Malpus wreck Bermuda, late 16th c.

Olive jar
Columbia Plain
Yayal Blue on White
Santo Domingo Blue on White
Glazed Merida-type
Aboriginal ware

San Pedro, circa 1595

Ligurian Blue on Blue
Glazed Merida-Type
Lead glazed
Porcelain

Atocha 1622

Olive jar
Flat-bottomed olive jar
Santo Domingo Blue on White
Sevilla Blue on White
Ichtucknee Blue on white
Sevilla Polychrome
Yayal Blue on White
Yayal Blue on White
Merida Type
Glazed Merida type
Panama Plain
Panama Blue on White
Aboriginal wares
Tinajas
Lead glazed
Feldspar Inlaid Redware
Bizcocho

TABLE OF CERAMIC TYPES FOUND ON WRECKS cont...

Santa Ana Maria, 1627

Olive jar
Flat-bottomed olive jar

Concepción, 1641

Olive jar
San Juan Polychrome
San Juan Plain
San Luis Blue on White
Lead glazed unidentified

Barbuda Wreck est. 1695

Olive jar

Mombasa Wreck, 1697

Olive jar
Portuguese glazed wares
Glazed storage jars
Chinese glazed stoneware
Coarse earthenwares

The 1715 Fleet

Olive jar
Columbia Plain
Lead Glazed
Majolicas

Tolosá and Guadalupe, 1724

Olive jar
Columbia Plain
Lead glazed
New world majolica
Puebla Blue on White
Bizcocho

The 1733 fleet

Olive jar
Columbia Plain
Puebla Blue on White
Guadalajara (Tonala) ware

Constante, 1768

Olive jar
Guadalajara (Tonala) Ware

Elizabeth, 1839

Olive jar

BIBLIOGRAPHY AND REFERENCES

- Ainaud de Lasarte, Juan**
 1952 *Cerámica y Vidrio. Ars Hispaniae*, Vol. 10, Editorial Plus Ultra, Madrid.
- Aga Oglu, Kamer**
 1956 Late Ming and early Ch'ing porcelain fragments from archaeological sites in Florida. *Florida Anthropologist*, 8 (4): 91 - 116.
- Arnold, J. Barto III and Robert Weddle**
 1978 *The Nautical Archaeology of Padré Island: The Spanish Shipwrecks of 1554*. Academic Press, New York.
- Barnes, Mark**
 1980 Mexican lead glazed earthenwares. *Spanish Colonial Frontier Research, Center for Anthropological Studies*: 91 - 110, Albuquerque, New Mexico.
- Barton, Kenneth James**
 1981 Coarse earthenwares from the fortress of Louisburg. *History and Archaeology*, 55: 4 - 74.
- Bass, George F.**
 1966 *Archaeology Under Water*. Thames and Hudson, London.
 1972 *A History of Seafaring*. Thames and Hudson, London.
- Boone, James L.**
 1984 Majolica escudillas of the fifteenth and sixteenth centuries: A typological analysis of fifty-five examples from Qsar es Seghir. *Historical Archaeology*, 18(1): 76 - 86, California, Pennsylvania.
- Borrell, Pedro J.**
 1980 *Arqueologia Submarina en la Republica Dominica*. Museo de las Casas Reales, Comision de Rescate Arqueologico Submarino, Grupo de Investigaciones Submarinas (GIS), Santo Domingo, Dominican Republic.
 1983 *Historia y rescate de galeon Nuestra Senora de la Concepción*. Museo de las Casas Reales, Comision de Rescate Arqueologico Submarino, Grupo de Investigaciones Submarinas (GIS), Santo Domingo, Dominican Republic.
- Brown, Johnathan**
 1986 *Velázquez*. Yale University Press, New Haven.

- Burgess, Robert F. and Carl J. Clausen**
 1976 *Florida's Golden Galleons: The Search for the 1715 Spanish Treasure Fleet*. Florida Classics Library, Port Salerno, Florida.
- Carrera Stampa, Manuel**
 1949 The Evolution of Weights and Measures in New Spain. *Hispanic American Historical Review*, 29: 2 - 24.
- Cervantes, Gonzalo Lopez**
 1976 Ceramica Espanola en la Ciudad de Mexico. *Boletin del Instituto nacional de antropologia e historia*, 18: 33 - 38. Epoca II-Septiembre/1976, Mexico.
- 1976 Ceramica Colonial en La ciudad de Mexico. *Coleccion Cientifica Arqueologia*, 38, Instituto nacional de antropologia e historia, Departamento de prehistoria , Mexico.
- 1978 Breve Noticia Sobre La ceramica Espaniol. *Antropologia E Historia , Boletin del Instituto nacional de antropologia e historia*, 22: 36 - 50 Epoca III, #22 abril-junio, Mexico.
- Chaunu, Pierre and Huguette Chaunu**
 1955 - 1959 *Séville et L'Atlantique (1504 - 1650)*, Vols. I - VII, Librairie Armand Colin, Paris.
- Clausen, Carl J.** (see Burgess).
- Council, Robert Bruce**
 1975 *Archaeology of the Convento de San Francisco*. M.A. thesis, University of Florida, Gainesville.
- Cox, Harry C.D.**
 1968 Links to the Past. *The Bermudian*, Vol. XXXIX, No. 9, Bermuda.
- Deagan, Kathleen**
 1978 The Material Assemblage of 16th Century Spanish Florida. *Historical Archaeology*, 12:25 - 50., California, Pennsylvania.
- 1987 *Artifacts of the Spanish Colonies of Florida and the Caribbean, 1500 - 1800; Vol. 1: Ceramics, Glassware, and Beads*. Smithsonian Institution Press, Washington, D.C..
- Egan, Geoff**
 1988 Post-Medieval Britain in 1987. *Post-Medieval Archaeology*, Vol. 22. p.197. London.
- Elliot, John H.**
 1963 *Imperial Spain: 1469 - 1716*. Penguin, Harmondsworth, England.
- 1989 *Spain and its World; 1500 - 1700*. Yale University Press, New Haven and London.

- Fairbanks, Charles H.**
 1966 A Feldspar-Inlaid Ceramic Type from Spanish Colonial Sites. *American Antiquity*, Vol. 31, No. 3, 430 - 432.
 1972 The Cultural Significance of Spanish Ceramics. *Ceramics in America*, Ian Quimby Editor, Winterthur Conference Report: 141-174, Delaware.
- Gausch, R. Pascual**
 1973 Underwater archaeology in Andalusia (Almeria and Granada). *The International Journal of Nautical Archaeology*, 2.1: 107 - 119.
- Goggin, John M.**
 1960 The Spanish Olive Jar. An Introductory Study. *Papers in Caribbean anthropology*, Nos. 57 - 64, Yale University publications in anthropology, 62: 25-50, Yale.
 1968 Spanish Majolica in the New World. Types of the sixteenth to eighteenth centuries. *Yale University publications in anthropology*, 72, New Haven.
- Grissim, John**
 1980 *The Lost Treasure of the Concepción*. William Morrow and Company, Inc., New York.
- Hamilton, E.J.**
 1934 *American Treasure and the price revolution in Spain, 1501 - 1650*. Cambridge, Mass.
- Haring, Clarence H.**
 1918 *Trade and Navigation between Spain and the Indies in the time of the Hapsburgs*. Peter Smith, Gloucester.
- Henderson, Graeme**
 1973 The Wreck of the "Elizabeth". *Studies in Historical Archaeology*, 1, Australian Society for Historical Archaeology, Sydney, Australia.
- Holmes, W.H.**
 1903 *Aboriginal Pottery of the eastern United States*. Washington.
 1985 *Studland Bay Wreck; Notes on the pottery*. report on file.
- Hoyt, Steve D. and Catherine A.**
 1986 *Bermuda and the Age of Exploration*. Bermuda Maritime Museum, Bermuda.
- Hurst, John G.**
 1977 Spanish pottery imported into medieval Britain. *Medieval Archaeology*, 21: 68 - 105.
 1985 *Studland Bay Wreck; Notes on the pottery*. report on file.
- Hurst, John G., David S. Neal, and H.J.E. van Beuningen**
 1986 *Rotterdam Papers VI: Pottery produced and traded in north-west Europe 1350 - 1650*. Gepubliceerd door, Rotterdam.

- James, Stephen R.**
 1985 *The analysis of the Conde de Tolosá and the Nuestra Señora de Gadalupe Olive Jar assemblage*. M.A. thesis, Texas A & M University, College Station, Texas.
- 1988 A Reassessment of the Chronological and Typological Framework of the Spanish Olive Jar. *Historical Archaeology*, **22;1**: 43 - 66, The Society for Historical Archaeology, California, Pennsylvania.
- Kamen, Henry**
 1988 *Golden Age Spain*. Humanities Press International, New Jersey.
- Keith, Donald H.**
 1987 *The Molasses Reef Wreck*. INA Exploration and Discovery Team, College Station, Texas.
- Kirkman, James**
 1972 A Portuguese wreck off Mombasa, Kenya. *International Journal of Nautical Archaeology*, **1**: 153 - 157.
- 1974 *Fort Jesus: a Portuguese fortress on the East African coast*. Clarendon Press, Oxford.
- Langouet, Loïc**
 1973 Les Jarres de la Rance. *Annales de la Société d'Histoire et d'Archéologie de l'Arrondissement de Saint-Malo*: 1 - 13.
- Leon-Portilla, Miguel; ed.**
 1962 *The Broken Spears: The Aztec Account of the Conquest of Mexico*. Beacon Press, Boston.
- Lefroy, Major-General J.H.**
 1981 *Memories of the discovery and early settlement of the Bermudas or Somers Islands, 1515 - 1685 Compiled from the Colonial Records and other original sources, Vol. I With revised chronology and erratum; 1511 -1652*. Chap. IV 1619 - 1622, Bermuda Historical Society, Bermuda National Trust , Bermuda.
- Lister, Florence C. and Robert H.**
 1976 *A descriptive dictionary for 500 years of Spanish-Tradition ceramics (13th through 18th centuries)*. The Society for Historical Archaeology, Special Publication Series, Number 1, California, Pennsylvania.
- 1978 *The First Mexican Majolicas: Imported and Locally Produced*. *Historical Archaeology*, **12**: 1- 24. California, Pennsylvania.
- 1982 *Sixteenth Century Maiolica Pottery in the Valley of Mexico*. The University of Arizona Press, Tucson, Arizona.
- 1987 *Andalusian Ceramics in Spain and New Spain: A Cultural Register from the Third Century B.C. to 1700*. The University of Arizona Press, Tucson, Arizona.

Logan, Patricia Ann

1977

The San José y las Animas: An Analysis of the Ceramic Collection.
M.A. thesis, Department of Anthropology, Florida State University,
Tallahassee, Florida.

Long, George A.

1967

Archaeological Investigations at Panama Vieja.
M.A. thesis, University of Florida, Gainesville.

Lynch, J.

1964

Spain under the Hapsburgs., Oxford.

1969

Spain Under the Hapsburgs. New York University Press, New York.

Lyon, Eugene

1974

The Search for the Atocha. Florida Classics Library, Port Salerno,
Florida.

1976

Atocha, Tragic Treasure Galleon of the Florida Keys. *National Geographic*, 149 No. 6: 786 - 809, Washington, D.C..

1976

The enterprise of Florida. University Presses of Florida, Gainesville,
Florida.

1990

Track of the Manila Galleons. *National Geographic*,
178 No. 3: 5 - 37, Washington, D.C..

Marken, Mitchell W.

1986

Ceramics from the Nuestra Señora de Atocha; Wrecked 1622.
published by the author, Key West, Florida.

Martin, Colin J.M.

1975

Full Fathom Five. Viking Press, New York.

1979

Spanish Armada Pottery. *The International Journal of Nautical Archaeology and Underwater Exploration*, 8.4: 279 - 302.

1988

A ceramic firepot from La Trinidad Valencera. report on
file.

Martin, Colin J.M. and Geoffrey Parker

1988

The Spanish Armada. W.W. Norton & Co., New York, London.

Marx, Robert F.

1983

Shipwrecks in the Americas. Bonanza books, New York

Mathewson, R.Duncan III

1975

Historic Shipwreck Ceramics: A preliminary analysis of olive jar data from the wreck site of the "Nuestra Señora de Atocha". unpublished paper on file.

1983

Archæological Treasure: The Search for the Nuestra Señora de Atocha. Key West, Florida

- 1986 *Treasure of the Atocha*. Pisces Books, New York.
- McEwan, Bonnie G.**
 1986 *The Historical Archaeology of Seville*. paper presented at the Sixteenth Century Studies Conference, Concordia Seminary & Center for Reformation Research, St. Louis Missouri.
- McIntyre, Keith A.**
 1983 *Analysis of Olive Jar Rims from the Nuestra Señora de Atocha and the Santa Margarita: A Step Towards Detecting Change Through Time in Olive Jar Rim Forms*. Ms. on file, Florida State Museum, Gainesville, Florida.
- Meike, Anne**
 1986 Letter on file.
- Mitchell, Steven**
 1988 Paste analysis report on file.
- Morales, Martin**
 1981 *Cerámicas populares de Andalucía*. Catálogo de la Exposición, Dirección General de Bellas Artes, Ministerio de Cultura, Madrid.
- Morison, Samuel Elliot**
 1974 *The European Discovery of America: The Southern Voyages 1492 - 1616*. Oxford University Press, New York.
- Muckelroy, Keith**
 1978 *Maritime Archaeology*. Cambridge University Press, London.
- Myers, J. Emlen**
 1984 *Provenience Analyses of Hispano-moresque Commonware Pottery from Qsar es-Seghir*. Smithsonian Institution, Washington, D.C..
- Nelson, Glenn C.**
 1984 *Ceramics: A Potter's Handbook*. Dryden Press, New York.
- Noël Hume, Ivor**
 1980 *A guide to artifacts of colonial America*. Knopf, 2nd ed., New York.
- Olds, Dorris L.**
 1976 *Texas legacy from the Gulf. A report on sixteenth century shipwreck materials recovered from the Texas tidelands*. Austin.
- Parry, John H.**
 1966 *The Spanish Seaborne Empire*. Hutchinson, London.
- 1963 *The Age of Reconnaissance*. The New American Library, New York.

- Parvaux, Solange**
 1968 *La Ceramic Populaire du Haut-Alentejo*. Presses Universitaires de France, Paris.
- Pearson, Charles E.**
 1982 *El Nuevo Constante: Investigation of an Eighteenth Century Spanish Shipwreck off the Louisiana Coast*. State of Louisiana Department of Culture, Recreation and Tourism, Baton Rouge Louisiana.
- Peterson, Mendel**
 1965 *History Under the Sea, A Handbook for Underwater Exploration*. Smithsonian, Washington, D.C., 1st ed.
 1973 *History Under the Sea, A Handbook for Underwater Exploration*. Published by the author, Alexandria, Virginia.
 1975 *The Funnel of Gold*. Little Brown, Boston.
 1979 Graveyard of the Quicksilver Galleons. *National Geographic*, 156 No. 6: 851 - 876 , Washington, D.C..
- Piercy, R.C.M.**
 1977 Mombasa wreck excavation, preliminary report. *International Journal of Nautical Archaeology*, 6 (4): 331 - 347.
 1978 Mombasa wreck excavation, second preliminary report. *International Journal of Nautical Archaeology*, 7 (4): 301 - 319.
 1979 Mombasa wreck excavation, third preliminary report. *International Journal of Nautical Archaeology*, 8 (4): 303 - 309.
 1981 Mombasa wreck excavation, fourth preliminary report. *International Journal of Nautical Archaeology*, 10 (2): 109 - 118.
- Pike, Ruth**
 1972 *Aristocrats and traders: Sevillian society in the 16th century*. Ithaca.
- Redman, Charles L.**
 1986 *Qsar es-Seghir; An Archaeological View of Medieval Life*. Academic Press, Orlando, Florida.
- Reina, Ruben E. and Robert M. Hill, II**
 1978 *Traditional Pottery of Guatemala*. University of Texas Press, Austin.
- Rhodes, Daniel**
 1968 *Kilns: Design, Construction and Operation*. Pitman, London.

- Rye, Owen S. and Clifford Evans
1976 *Traditional Pottery Techniques of Pakistan*. Smithsonian Contributions to Archaeology, No. 21, Washington, D.C.
- Sassoon, Hamo
1981 Ceramics from the Wreck of a Portuguese Ship at Mombasa. *Azania*, 16: 97 - 130.
- Schafer, Ernst
1938 Spaniens Koloniale Warenausfuhr nach einer Preisliste des 16. Jahrhunderts. *Ibero-Amerikanisches Archiv*, 12: 313 - 332.
- Shurz, William L.
1939 *The Manila galleon*. E.P. Dutton, New York.
- Skowronek, Russell K.
1984 *Trade Patterns of Eighteenth Century Frontier New Spain: The 1733 Flota and St. Augustine*. Volumes in Historical Archaeology, the South Carolina Institute of Archaeology and Anthropology, Columbia, South Carolina.

1987 Ceramics and Commerce: The 1554 flota Revisited. *Historical Archaeology*, 21(2): 101 - 111, The Society for Historical Archaeology, California, Pennsylvania.
- Smith, Roger C.
1986 *Ceramics Recovered from the Molasses Reef Wreck; Turks and Caicos Islands, B.W.I.*. report on file.
- Throckmorton, Peter; editor
1987 *The Sea Remembers*. Weidenfeld & Nicolson, New York.
- Torre Revello, J.
1943 Merchandise Brought to America by the Spaniards (1534 - 1586). *Hispanic American Historical Review*, 23: 773 - 781, Duke University Press, Durham, North Carolina.
- Tucker, Edward B. "Teddy"
undated Adventure is my Life. *Saturday Evening Post*, New York.
- Vicens Vives, Jaime
1969 *An economic history of Spain*. Princeton University Press, Princeton, New Jersey.
- Von Der Porten, Edward P.
1973 *Drake and Cermano in California: Sixteenth Century Chinese Ceramics*. Drake Navigators Guild, Point Reyes, California.

- Weddle, Robert and J. Barto Arnold III**
1978 *The Nautical Archaeology of Padre Island: The Spanish Shipwrecks of 1554*. Academic Press, New York.
- Williams, D.F.**
1979 Petrological analysis. in Martin, Colin J.M.; Spanish Armada Pottery. *The International Journal of Nautical Archaeology and Underwater Exploration*, **8.4**: 298 - 299.
- Zuill, William Sears**
1956 Teddy Tucker and his Treasure. *The Bermuda Historical Quarterly*, **XIII (2)**: 57 - 66, Bermuda.